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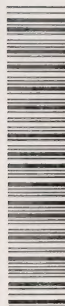
ada. Montreal Harbour Commission

Government
Publications


The (HARBOUR of MONTREAL)



Annual Report ~ 1929



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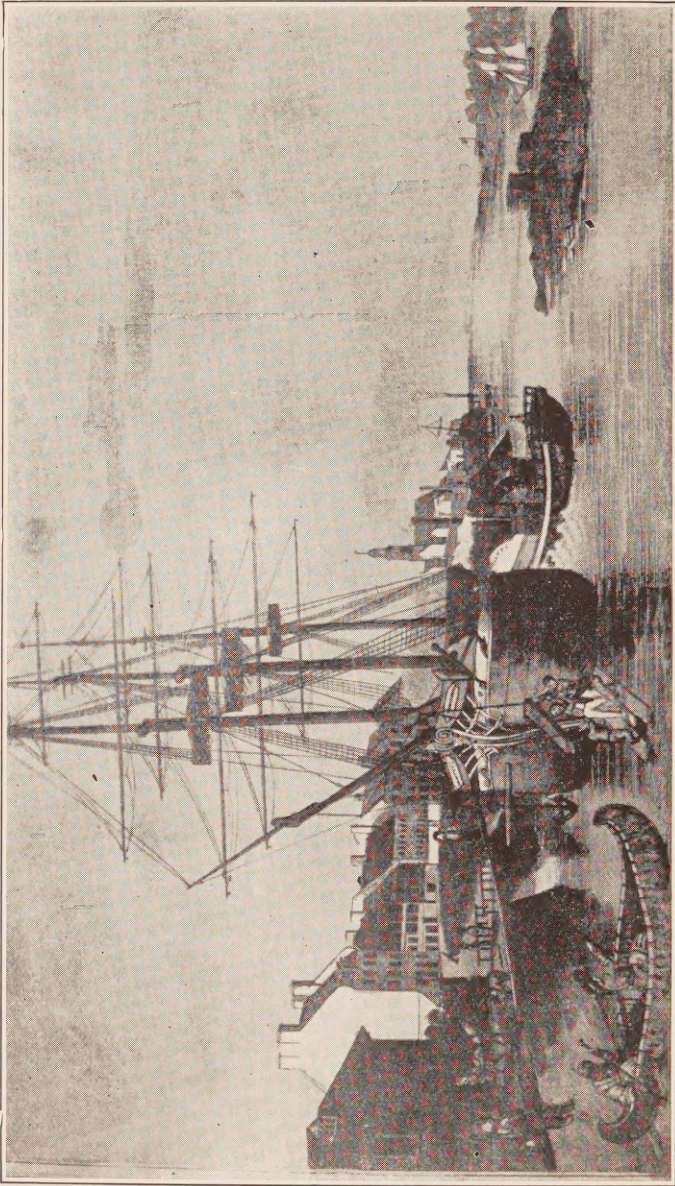
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ANNUAL REPORT
OF THE
Harbour Commissioners
of Montreal

For the Year 1929



COMMISSIONERS :
HON. W. L. MCDOUGALD, M.D., President
Dr. MILTON L. HERSEY, LL.D.
ALFRED LAMBERT, Esq.



ONE HUNDRED YEARS AGO! THE HARBOUR AS IT APPEARED IN 1830.

Harbour Commissioners of Montreal

MONTREAL, 1ST APRIL, 1930.

To the Hon. P. J. ARTHUR CARDIN, M.P., P.C.,
Minister of Marine,
Ottawa, Ont.

Sir:—

In compliance with Section 51 of the Commissioners' Act 57-8 Victoria, Chapter 48, the Harbour Commissioners of Montreal herewith respectfully submit their Annual Report of operations for the year ended 31st December, 1929.

We have the honour to be,
Sir,

Yours very respectfully,

W. L. McDOUGALD, President.
MILTON L. HERSEY,
ALFRED LAMBERT,
Harbour Commissioners.

IN PRESENTING their Annual Report for the year Nineteen hundred and twenty-nine, the Harbour Commissioners of Montreal take this opportunity of recording their appreciation of the unfailing support and courteous co-operation of the Minister of Marine, the Hon. P. J. Arthur Cardin, and his Deputy Minister, Mr. Alexander Johnston, and the other officers of the Department at Ottawa, whose kindly interest has been of very material assistance to them in the solving of the many problems which they were called upon to deal with during the year.

Harbour Commissioners of Montreal

ANNUAL REPORT

1929

GRAIN SITUATION IN 1929 AND THE HARBOUR OF MONTREAL

“In what must of necessity be a cursory review of operations at the Montreal Harbor in the navigation season of 1929, it may at once be stated that the outstanding and striking feature was the shrinkage in the export grain movement from the peak established in 1928, when 210,531,181 bushels were delivered for export, to the lowest volume recorded since 1920, when the total stood at 44,435,000. For the season now closed the total cleared for export stands at 90,641,258 bushels.

“As is well known, there was a steady expansion in the grain movement from year to year during the past eight years, establishing the Port of Montreal as easily first amongst the grain exporting ports of the world. The reasons which combined to bring about so precipitate a decline in a single season must be sought elsewhere than in this country. The wheat crop grown in Canada in 1928 greatly exceeded that of any other year. The totals for the Western Provinces, whence is derived the export surplus, was 533,572,000 bushels. Out of that crop Canada exported to foreign countries in the period from August 1, 1928, until April 30, 1929, over 325,838,000 bushels of all grades (flour being reduced to bushels of wheat). This total was approximately 100 million bushels in excess of the exports for the corresponding 1927-28 period, which latter also exceeded the exports of any previous like period. On the other hand, exports of wheat (including flour as wheat) from the United States in the similar period had fallen short of the

previous year's export by approximately 50 million bushels, though their export surplus was larger than in any recent year. Both in Canada and in the United States these crops were abnormally abundant and were supplemented in each country by a very large carry-over from the previous crop year. By far the greater bulk of the United States export surplus from that crop was winter wheat.

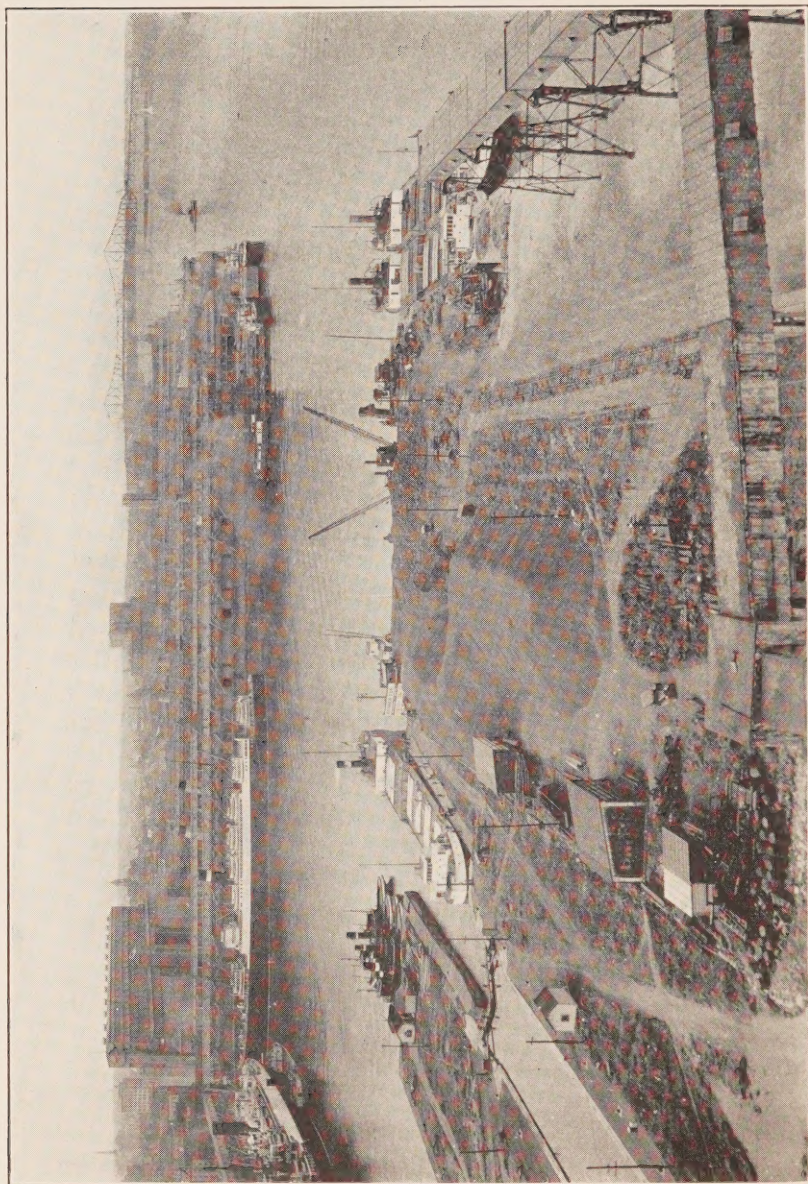
"When, therefore, navigation opened in the St. Lawrence at the end of April, what remained of a large export surplus in both countries was on display at all the great terminal markets along the Great Lakes and St. Lawrence waterways and at Atlantic and Gulf ports, awaiting buyers. Under the stimulus of proposals of President Hoover for the relief of the farmers in the United States, to implement which he had summoned Congress in special session, grain prices had been sustained at a relatively high level in their markets throughout the winter and spring, so that these prices had worked completely out of line with the markets of the importing countries. The consequence was that foreign buying of American grain had come almost to a complete standstill. Recognizing in this situation 'an emergency of national proportions,' the Hoover administration at Washington early in May broke all precedent in appealing to the eastern railway executives to lower transportation rates on wheat for export, and later also on flour shipments, and these reductions were made effective until September 30th. The western railways took similar action, and this was promptly followed in Canada, of necessity, by corresponding reductions of rail rates on wheat for export from this country.

"At the end of March the Department of Agriculture, Washington, showed a total of over 355 million bushels of wheat still to be disposed of in advance of a new crop, this supply being approximately 150 million more than in 1928, which was the greatest stock remaining over at that period since 1919. Early in May, following Washington's intervention in the situation above described, a precipitate decline set in in the grain markets of America, which carried the wheat prices at Chicago to 93c a bushel, the lowest level in

fifteen years; comparing with an average of \$1.45 the year before, and with the current May option high level of \$1.28 a bushel. At the farm this represented about 75c to 78c a bushel, or 48c less than the farm price of a year previous. Like declines occurred in the Winnipeg market and there were corresponding declines in other grains.

“While this panic was proceeding in the United States, accompanied by demoralization in the grain rate structure, rail and water, on both sides of the line; while they were advertising to the world in the most dramatic manner the burden of their unsold supply of breadstuffs, the foreign consuming markets were importing more heavily than in any previous year, but importations from the United States were relatively negligible in quantity. Up to April 30 last these foreign importations totalled 697 million as against less than 592 million bushels in the like period of the previous year; in the remaining three months of the importing season this total was brought up to over 900 million, a record total, and about 100 million more than the total in any previous year.

“From January 1 to May 3 the Argentine Republic had been exporting from its 1928 crop, with a total at the latter date of a little above 106 million as against 107 million bushels in the corresponding period of the year before. As has been stated, the Canadian exports of wheat for the nine-month period ending April 30 totalled 325,838,000 bushels, valued at \$360,531,000, as against 237,565,000 bushels, valued at \$311,105,000, in the corresponding period of 1928. These foodstuffs left Canada for consumption in upwards of forty different foreign lands. Down to this date, therefore, in the nine months’ marketing period, the excess requirements of the world’s markets had been supplied by the Canadian grower. It is permissible to submit that this was a triumph of successful merchandising, since it is well known in the trade that during most of that marketing period down to May 1, 1929, the Liverpool market had been a buyers’ market, with pressure from all the exporting countries, including the United States, at a price parity materially under that of wheat in the American markets. The performance redounds greatly to the



STRIKING PHOTO OF THE PORT TAKEN FROM THE ROOF OF GRAIN ELEVATOR "B"

credit of the Canadian marketing and selling agencies; and, as well, to the credit of Canadian harbor and transport, elevator and shipping concerns whose efficiency and exact functioning from the farms to the seaboard made it possible to forward a prodigious and unprecedented tonnage of grain.

“Following the drastic decline in prices to the lowest level seen in fifteen years, the takings of the import countries from the United States still remained negligible. The crop prospect in the winter wheat area of the United States up to this time was brilliant, but deterioration was threatened, whilst in the Canadian Western Provinces an alarming condition was developing and became increasingly aggravated from week to week, it being feared at one time that the 1929 Prairie Provinces’ wheat crop might fall under 200,000,000 bushels, or about one-third of the 1928 total. In the space of a few weeks’ time the markets at Winnipeg and Chicago registered a perpendicular rise in prices in the options of as much as 75c above the low at Winnipeg and of about 50c above the low at Chicago made early in May. With varying fluctuations, these price levels were maintained in both markets until the month of September. The response of the foreign markets to these new price levels was far from adequate, and their purchases of wheat, both in Canada and in the United States, continued alarmingly small. Nevertheless, at the close of the crop year in Canada, July 31, 1929, it was found that this country had exported in the crop year 407,564,000 bushels of wheat, valued at \$453,821,000, as against 332,963,000 bushels, valued at \$441,039,000, in the year ended July 31, 1928.

“The crop year of Argentina coincides with the calendar year and thus ends December 31. As has been seen, wheat exports from that country during the first five months of the marketing year were on a level in volume with those of the preceding year. In June, exports from that country to Europe commenced to show weekly increases, and the volume was sustained until the end of the year, when the total of exports was found to be about 250,000,000 bushels, far and away the largest volume of wheat exports out of that country in any

one year. During all of this period, Argentina wheat was on offer to the European markets at prices materially lower than was asked either for Canadian or United States sorts. At times the Winnipeg markets were as much as 30c a bushel out of line with Liverpool, whilst the Chicago options were also steadily enough out of line to render business impossible. In these circumstances the marketing season wore on until the close of navigation at this port, with wheat and other grain clearances from week to week reduced almost to the vanishing point by comparison with those of any other of the past ten years.

“During the drastic decline in prices in May, as well as during the spectacular advances which followed, which latter, with recessions, have been sustained at Winnipeg and at Chicago, there have been at times clamorous fault-findings with the Canadian Pool because of its assumed policy of withholding wheat from the foreign markets, except at a price level which these markets have consistently refused to pay throughout the season; all of this greatly to the detriment of Canadian trade, transport and shipping interests, freight and exchange prices, etc. This might be a tenable complaint if the pool controlled the Canadian export surplus, whereas the fact is that that organization has at no time controlled as much as 60 per cent thereof. The remaining 40 per cent and upwards, being outside the pool, is wholly free to accept business at its discretion, and thus to affect the cash and option markets with a volume of actual grain not far short of the quantity in control of the pool. The export figures which I have cited further demonstrate that the pool has been supplying such export demand as existed, and has, in fact, conducted an extremely tactful and skilful merchandising programme throughout these two singular crop years.

“Another factor has entered the situation in recent months, namely, the completion of the United States Farm Board under Federal legislation and fortified with very large and adequate subventions of public money to aid in the merchandising of the farm productions of that country. Unlike the Canadian Pool, a voluntary organization operating with its



HOW THE NEW BRIDGE LOOKS FROM THE TOP OF THE ROYAL BANK BUILDING

own funds and credit, the Farm Board, employing public funds, has already taken a position in the speculative markets by announcing a minimum bid price for certain grades of wheat at Chicago and Minneapolis.

"I have recounted at some length the story of happenings in three continents during 1929 which have had a profound effect upon the trade and fortunes of the Port of Montreal, and which have been the means of dislocating, in an important degree, its trade and traffic in a wholly unexpected fashion during the navigation season. The reason for doing this at this time, at the possible risk of tedium, is because it seems opportune to emphasize the fact that the Port of Montreal is not merely a local or even a national fabric, though situated in Canada, but is a great international institution which reacts and responds sensitively, from season to season, to crops, crop climatic conditions and markets all over the world. Local conditions are in the control of the Canadian people, but since we have chosen to embark upon a colossal scale in the working of our agricultural resources reproductively from year to year, and since these products must find markets overseas in competition with other expanding countries, the happening of the past season may well cause us earnestly to take thought as to ways and means which may advantageously be employed to avert the recurrence of such a situation."

The foregoing is a compilation from an article contributed by the President of the Harbour Commissioners to the Commercial and Financial Review for the Year 1929 issued by "The Gazette" (Montreal). It was inevitable that the business and activities of the Harbour should be profoundly affected by the situation therein described as it gradually unfolded itself after the opening of the navigation season. The high momentum in the grain export movement established in the 1928 season extended well into that of 1929. Early in May, deliveries from the harbour elevators for export commenced in sizeable volume and throughout the month continued to expand until for some time the total from day to day showed an excess over the corresponding days of the previous season of about two million bushels. This excess

was maintained well on throughout the month of June. Early in July, a decline in the daily export total commenced to appear so that by the middle of the month the daily totals fell under those of the corresponding days of the previous year. This decline continued without interruption until the close of navigation early in December. Month after month throughout the late summer and autumn, when the flow of grain clearances for overseas should normally be reaching new peaks, the reverse of this was happening. Never in the experience of the harbour was a contrast so singular and arresting exhibited in the grain export movement during any two succeeding seasons.

The retarded export movement at the harbour was a reflection of the stagnation in the cash grain markets. As the season advanced towards the close of navigation, it was apparent that a stalemate had developed between the export and import markets and this was not relieved at the close of the year. The grain markets at Chicago and Winnipeg were sustained at a high price level until beyond the close of the year by two factors, the first being the then ascertained fact that the Canadian wheat crop harvested was little more than half that of the previous season, though of unusually high grade and milling value; and the second because the programme and operations of the new Government Farm Board in the United States were widely proclaimed as certain to stabilize prices at a high level. In all previous experience in the grain markets, a short crop of high quality would almost invariably command a high price, or at all events would be in lively demand at good premiums over the prices for contract grades. In this year, however, nearly every European importing country produced bumper crops of bread grains. It was found, therefore, that their requirements fell very much under those of the previous year, and, in fact, it is now known that these imports are not likely to exceed six hundred and twenty-five million bushels of wheat as against about nine hundred and twenty millions actually imported in the previous year. Here, therefore, is the sufficient reason for the collapse of the wheat demand in the North American markets following the harvesting of the 1929 crop.

It is quite true that crop statisticians are able to show a theoretical shortage in the 1929 world's wheat crop of perhaps 500 million bushels, but the average production over a five year period, in two at least of which production exceeded all previous records, and with consequent increasing carry-over from year to year until in this year it became burdensome, greatly exceeded average consumption; so that the balance was clearly in favor of the buyer in the importing countries. World's wheat production in bushels for each of the last five years follows (Russia and China excluded):

1925.....	3,435,000,000
1926.....	3,420,000,000
1927.....	3,605,000,000
1928.....	3,925,000,000
1929.....	3,390,000,000

Throughout the whole year a vast amount of learning and discussion has been disseminated all over the North American continent in exploitation of every phase of the problems of growing, harvesting and marketing the surplus wheat crops of the continent. A large part of it has been expended in the futile effort to fix the blame for failure upon one marketing agency or another. The ramifications and complexities of the grain trade are so vast and so intricate that the ordinary observer who undertakes to follow what is happening from month to month becomes lost in an inextricable maze.

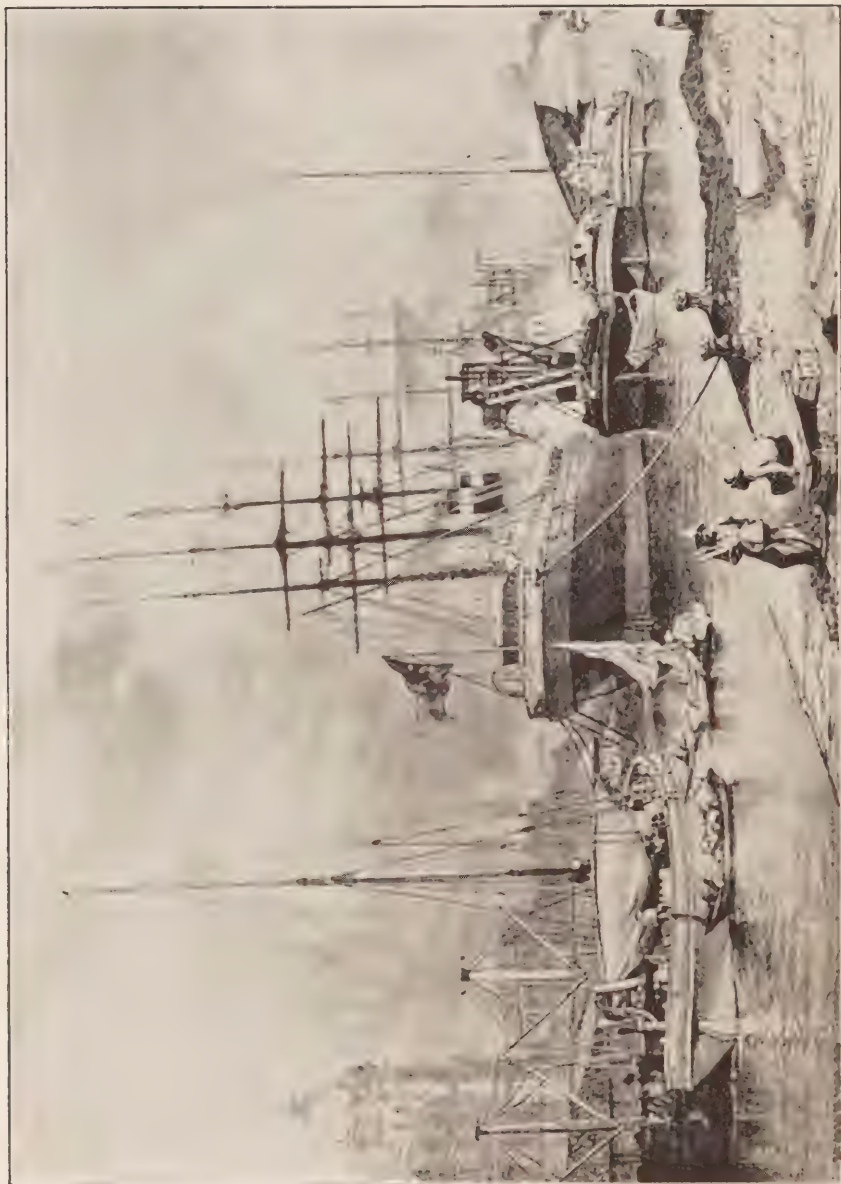
Somewhere in the world there is being harvested every month in the year one or more crops of bread grains. Certain of these countries are upon a domestic basis, that is, they grow only enough grain for their home requirements and are thus neither exporters nor importers; other countries grow a surplus greatly in excess of home requirements and thus fall into the category of exporting countries; whilst a third group fall far short of producing bread grains for their home needs and thus fall into the category of importing countries.

The principal units in the second group are the United States of America, the Dominion of Canada, the Argentine Republic, the Commonwealth of Australia and the Danubian countries. Until very recent times Russia and India were

included in this latter group. Great Britain and Ireland and most of the countries of the continent of Europe constitute the principal units in the third group. Almost every country in this group is a grower of one or other of the bread grains and their requirements fluctuate in a wide range from season to season, dependent upon climatic and crop conditions within their own boundaries.

As is well known the four principal export countries, Canada, the United States, Argentina and Australia, have greatly expanded production in recent years and during the last three crop seasons have harvested unusually abundant yields of wheat. The consequence was that they each carried over into the new crop year at the end of each of the last two seasons very large surplus reserves. This notwithstanding that importing countries took upwards of 900,000,000 bushels of wheat from the 1928 crop, which was about 100,000,000 bushels in excess of the annual average requirements for a series of years. For the most part the 1929 crop grown in the main group of the import countries was unusually prolific and has been described, in some of them, as "bumper." Competent authorities, therefore, place their import requirements from the 1929 crops at about 625,000,000 bushels for the crop year ending July 1, 1930. The failure to market the vast surpluses which have been accumulated is therefore plainly due to lack of customers rather than to lack of merchandising talent.

Adventitious circumstances have entered into and have no doubt affected the problem, but have not altered the main and fundamental position, which is that there has been over-production all over the world upon a large scale and that consumption has not followed the pace. The adventitious circumstances were the great price rise in America in the early part of the growing season in 1929 which carried the price level for wheat options and cash wheat as well to levels wholly unknown in recent times at that period of the crop year. This rise, which was based almost altogether upon fear of disastrous reduction in the Canadian crop, had a justifiable, if speculative, basis because that fear became a reality when



THE PORT OF MONTREAL WHEN STEAM WAS FIRST COMING INTO ITS OWN

at the close of harvest it was found that the total Canadian yield was not much more than half of the bumper crop of the preceding season.

The other circumstance was the entry of the United States Government during that year into the speculative and merchandising grain markets buttressed with abundant supplies of working capital supplied by the National Treasury. The superficial observer was certain to be affected by this spectacular operation, and the consequence was a lively speculation for the rise was maintained during the greater part of the period of marketing from the farms, that is, throughout the whole last half of the year. The open interest in the active options in the leading grain markets in terms of bushels throughout this period was much higher than had ever before been reached in the history of the grain trade. At times this open interest in wheat at the Chicago Board of Trade reached the stupendous total of about 230,000,000 bushels, while at no time throughout the crop year has it fallen under the totals of wheat held in the visible supply.

A further sustaining influence was the conviction disseminated everywhere in North America in the public prints and sponsored by the highest authorities in finance and in affairs that ultimately the consumers in the importing countries would be obliged to seek supplies in North America upon a large scale because of an assured shortage in world's stocks. While this annual report is being made up that illusion has been dispelled by the relative indifference of the European buyer stolidly maintained from month to month until the option and cash markets in the principal grain exchanges have fallen back from the peak prices of June and July last, to a parity with the price levels made in the great decline of May, 1929.

It will also be considered satisfactory that a worthy and competent instrument, to wit, the United States Government, for testing the efficacy of the new devices in merchandising has been pressed into that dubious service. The problems of agriculture are and have been acute in all parts of the world and in some countries are distressing. The formula for stabilizing the production and merchandising of agricul-

tural commodities remains to be discovered. The United States Government is engaged in an impressive experiment happily fortified with illimitable capital and credit to test its devices out to a finality. It is estimated that that Government has embarked in the form of subsidies, bank and mortgage credits, and stabilization funds, no less a sum than about \$2,500,000,000 of the people's taxes in operations for placing the American merchant flag upon the seas for conveying its agricultural and industrial products to foreign markets and for rescuing the agriculturist, whether a grower of wheat, corn or cotton, from the various successive distresses and misfortunes into which he has fallen during the past ten years.

Nor have the European growers of breadstuffs been exempt from similar anxieties during this abnormal year of excessive world supplies. Depressed and falling markets have ruled in these countries under pressure of "bumper" crops of wheat and rye in some of them combined with aggressive overseas competition. France, Germany and Austria have each employed tariff devices which their governments are enabled to do under their fiscal systems by decree, to meet exigencies of competition as they arise, for the protection of the native grower. In France the wheat duty, suspended during the war, was restored last October. This was in response to the "cry of the farmers that they have been left out in the cold during the recent tariff advances for the benefit of industry." This is a familiar cry indeed in America!

Wheat from Germany, it is said, was "dumped" in Great Britain, "underselling the British farmer and further helping to insure his ruin." The problems suggested by this incident are not new, but it gave rise to widespread discussion both in and out of Parliament. There is general recognition of the fact, as set forth by so eminent an authority as Mr. A. H. Hurst, that "the growth of Pools, Farm Boards, and Grain Monopolies at producing points, coupled with the parallel tendency of Milling Trusts and Baking Combines at consuming centres, has brought about a profound revolution in the mechanics of Wheat Marketing." State intervention, the creation of a Wheat Import Board, for centralizing and

controlling imports and stabilizing prices, is a program laid down before the Royal Commission on Food Prices in 1925 and afterwards set out as the policy of the Labour Party. Acceptance of the general principle of these proposals or sympathetic consideration of them has been announced by such authorities as Lord Bledisloe and Colonel Guinness, Ministers of Agriculture in former ministries.

All of this is of intense concern to the Canadian Grain Growers whose heretofore sure market has been dislocated and indeed put in peril. What concerns them cannot fail to stir a compelling interest at the Harbour of Montreal engaged, as it is, in rendering them a vital service and in thus sustaining its status as the largest grain export centre in the world.

Frequently during the last eight years the Commissioners in their Annual Reports have emphasized the danger of the producers of this country encountering disastrous competition in the markets of the world. The world-wide revolution occurring in the production, marketing, forwarding and distributing of primary foodstuffs has frequently been dealt with. It was declared that the only safe and effective formula is the steady reduction in the cost of production on the Prairies, and the perfection of transport and handling facilities from these areas to the sea, having regard to the factors of time, distance and cost. There are not alone the dangers and uncertainties of competition; the evolution of events in the grain markets of the world in the past year as well as the immediate effects at the Harbour and to the commerce of all of Canada compel attention everywhere to the major questions of national interest thus raised.

FOREIGN TRADE ZONES

In other issues of these Annual Reports this subject was dealt with in considerable detail. The purpose of the Commissioners was primarily to elicit discussion with a view of determining what use or advantage could be got from the creation of such a facility in the Harbour of Montreal. Other projects, however, appeared to be of greater urgency and demanded first attention from the Commissioners during the recent years of unexampled expansion at the harbor so that consideration of this interesting subject had to be deferred from year to year. During the past year there has been a marked revival of interest in it occasioned principally by plans which have been considered by other ports both in Canada and in the United States. It appears, therefore, to be opportune to deal with the subject in this Report.

The United States Shipping Board, a Government creation, is intensively searching out every possible device for producing cargo for its various fleets of vessels. It has caused a very comprehensive analysis and investigation to be made concerning foreign trade zones, or free ports, "with special reference to the advisability of their establishment in the United States." A report was prepared by The Board of Engineers for Rivers and Harbors and the Bureau of Operations of the Shipping Board and this was issued last year as a Government document. This volume is the most valuable contribution yet made to the discussion of the subject. It reviews in great detail the history of foreign trade zones and assembles all the facts, figures and records which have been developed in the creation and operation of every foreign trade zone wherever one has been established in any seaport in the world. There are complete reprints of the constitutions, by-laws and regulations under which these zones are administered and there are categorical records covering periods of years, in some cases the whole period of operation, which show the growth of business in these areas, the records of tonnage handled, and in some instances the balance sheets and profit and loss statements exhibiting the pecuniary results. In Europe nearly 30



TRAMP SHIPS IN THE PORT OF MONTREAL

such zones are at present in operation, principally in Germany, Denmark, Sweden, Spain, Italy and Greece. The volume is embellished with a very large number of illustrations depicting the configuration in detail of the various harbors in which free zones have been created, with others copiously illustrating the character of the plant and structures used in operating them.

It is stated that bills having been introduced into Congress for establishing foreign trade zones this study was undertaken with a view to "developing full information regarding the practicability of the establishment of such free ports, the aim being to present in a succinct and impartial way the facts as they exist, avoiding all argumentative and partisan statements." The whole is intended to ascertain the effects produced by the establishment of such ports on shipping and terminal facilities wherever they have been operated in order to furnish a basis of judgment as to whether such zones might with advantage be established in the United States.

At the outset there is furnished a useful definition, expressed in general terms applicable to all the principal free ports. It is as follows:

"A free port is a segregated area in which goods not otherwise prohibited may be unloaded and stored, subject to varying restrictions as to sorting, grading, repacking, manipulation, and manufacture, and in which such goods or authorized manufactures therefrom may be reloaded and shipped to foreign destinations, all without the imposition of the customs formalities and duties applicable to similar goods entering customs territory."

It is pointed out that there are many types of foreign trade zones, some embracing seaports which are free in their entirety, others in which shipping and international trade is restricted to assigned zones, others in which the principle is limited in its application as in the case of free warehouses, victualing warehouses, etc. For the purposes of the present discussion the term free port or foreign trade zone will be confined to segregated zones coming within the terms of the definition already quoted.

First and greatest of foreign trade zones, though without a specially segregated free zone for it has flourished in a free trade country, is London. Following the great Gladstone budgets of 1853 and 1860 its trade became virtually exempt from fiscal impediment to its development and to the maintenance of its premier position as the great transshipment and reconsignment market for goods from the four corners of the earth. To London were maintained regular sailings by the great freighter lines from all the most important seaports of the world. Mixed cargoes could be consigned to this entrepot of world trade as readily as bulk cargo with the certainty of a market. It thus became the great international merchandising market and financial centre of the world, the ideal free port.

Immense quantities of goods are imported, beyond the needs of the 10,000,000 people in the metropolitan area, to be stored, fabricated, sold and distributed not only in the United Kingdom, but in other parts of the world. It is said that an enormous proportion of its vast population finds its vocation as distributors and middlemen, merchandise and shipping brokers and factors, financiers and bankers, bookkeepers and typists, longshoremen and warehousemen occupied with its re-export trade. Its rank in both spheres of international merchandising and finance it has sustained inflexibly through all the vicissitudes of the intervening years.

The greatest of the continental free ports is Hamburg, which, though a member of the Hanseatic League from a remote era, yet fixes its rise as a great world port from the year 1871 when, with Bremen, it came into the newly-created German Empire only on condition that it should remain outside the Customs Union. In that year Hamburg was the domicile of only one overseas shipping line, the Hamburg-American Co., whose other home port was New York.

Up to 1869 Hamburg was dependent upon England, for 60% of the tonnage of ships entering its harbor carried exports and re-exports consigned principally from London. Not until 1882 did Hamburg come into the Customs Union, the Empire appropriating a large sum for the creation of a free



AERIAL VIEW OF THE PORT TAKEN EARLY IN THE SUMMER OF 1929

port which was opened in 1888. Up to this period the overseas trade of Hamburg was mainly carried by casual or "tramp" vessels. It is curious to note incidentally that to this day half the steam tonnage of the world is still in "tramp" steamers.

The creation of the free port, the expansion of German industry and the founding of great shipping companies followed in natural sequence. The settled purpose of Hamburg and of the Empire to establish a great world port was speedily realized. A formidable rival to the first of the great free foreign zones, London, was in the making. The ships of the world brought goods in full cargoes to its free port, where they were warehoused and re-exported to Scandinavia and the Baltic countries. Hamburg became a great distributing centre for Northern Europe.

Early in their analysis the investigators concluded that owing to the remoteness of most American ports from foreign countries to which import goods could be re-exported, it should not be expected that the immediate use of free ports in America would approach the success attained at Hamburg or at other active European free ports. The ultimate importance of free ports to the United States "would largely depend on the extent to which American ports became world centres for the distribution of goods coming from or the collection of goods destined for certain areas of the world, nearby or afar, which are not themselves great shipping centres. That there would immediately be some business of this kind there can be no doubt. As to whether it would ultimately be large or small only the future could tell." It was then pointed out that in many of the ports of Europe goods are distributed to other ports by rail as well as by water, but in the United States such redistribution would be mainly by water, exceptions being goods to and from Canada and Mexico, which might move to and from those countries under bond by all-rail routes.

The free port is essentially a maritime institution. It has its economic cornerstone in the load factor and its proper

location is at the "crossroads of shipping lanes." All European countries appear to have recognized that the essential function of the free port is to facilitate transshipment and reconsignment trade, and that manufacturing when permitted is a secondary purpose. The free port is concerned chiefly with foreign goods which are to be reshipped to other foreign destinations although some of these imports may eventually be entered for consumption. The formalities with their attendant delays to the importer of merchandise would be eliminated within the free zone. The operations which are essential to the success of the free zone are those which are necessary to receive, store, and sort goods, and to prepare and repack them for distribution. Full cargoes of certain commodities such for example as rice may be brought into a free port and there cleaned, graded and polished. The grades required for the home market can be brought into the home customs territory, and the remainder reshipped to other markets. The refining of sugar, washing and cleaning of wool, shelling and roasting of coffee, extraction of vegetable oils, shearing and tanning of skins and hides, canning, sorting, filling into containers and repacking of food products, are representative of the operations often permitted and performed in free ports.

It will be observed that none of the operations which it has been found could be of benefit to international trade at European free ports are permitted in our bonded customs warehouses. Goods cannot be imported in large lots, and thereafter repacked, filled into containers, sorted, graded, or otherwise prepared to meet the requirements of various markets. They can be withdrawn only in their original packages except where cleaning, sorting, and repacking is necessary to the safety or preservation of the merchandise. "In the customs area these precautions are no doubt absolutely necessary, but it is clear that they serve to discourage our export trade." Only where there is freedom to store goods in any quantity and to re-export in any quantity is it possible to attain the greatest success in trade of the nature which has built the greatness of London, Antwerp, Amsterdam and Hamburg.

The establishment of a free port in this country would offer to importers the opportunity to buy goods in large quantities, frequently at more favorable prices, to sort these goods, sending into the home market, after payment of duties, the grades and qualities suitable for our trade, and re-exporting the remainder, either alone or in conjunction with other goods, to the various markets conveniently reached by the vessel lines or railroads touching at the free port. While awaiting sale the goods in a free port are not subject to any expense except storage and insurance. They are not under customs control, and the importer is free to exhibit them, to take orders, to divide the packages and repack to suit customers' wishes.

Privileges similar to the above would permit the unrestricted development of transshipment and consignment trade, which is the true function of the free port. There would appear to be new opportunities to the importer and exporter, enabling him to engage in international trade which heretofore has been regarded as impracticable by reason of the customs' barrier. These operations demand the intelligent articulation of land and water transportation routes for distribution of merchandise and commodities beyond the areas of the free zone.

Should manufacturing be allowed, importers using many foreign raw materials and having a large export trade in the finished products, could advantageously establish a branch plant in the free zone especially to meet the export demand.

The foregoing is a more or less literal transcription of the findings and conclusions arrived at by the investigators who made up the report. Everything which they discovered in the history and experience of foreign trade zones and free ports which would support the development of that idea at any seaport of the United States will equally sustain a proposal for developing the idea at the port of Montreal. There are, moreover, compelling reasons in respect to Montreal which do not obtain at any other port in America; and there are other factors operative also at Montreal which would insure the success of such a project which are not and never have been in evidence at any of the European foreign trade zones already

in operation, nor at any United States seaport at which the project could be put into operation.

The investigators very early in their analysis reached the conclusion that the "remoteness" of most American ports from "foreign countries" would greatly minimize the possibilities of success. They have thus put a finger at once on the crux and gist of this situation, for a free zone can be of little utility except for purposes of re-export, transshipment and reconsignment trade into one or more contiguous foreign countries. The United States of America can scarcely be considered to be in this position although, it is true, two important foreign countries, Canada and Mexico, are situated upon her borders. In the case of neither one of them is it probable that any volume of re-exports from overseas countries through a United States free zone could be developed because each is itself served by important seaboard and is in the wake of important shipping lanes and trade routes into every sea.

Although the foreign export trade of Canada is, per capita of population, vastly more important than that of the United States, apposite to this point are the important findings of the Interstate Commerce Commission and the Departments of State and Agriculture as submitted to the United States Senate early in 1929, in which it was conclusively demonstrated that Canadian overseas import trade had almost completely disappeared from United States seaports in the last 20 years because of the adequacy and efficiency of Canadian routes and ports. No free zone facilities which could be created in the United States could reverse this trend. There is no adjacent foreign population of magnitude which could be served with any advantage whatever by any facilities which could be created in a United States free zone.

How different is the situation at Montreal can be realized by even a neophyte able to look at a map of the St. Lawrence and Great Lakes waterways system. At the head of ocean navigation in the heart of the North American Continent, a thousand miles from the Atlantic Seaboard yet closer to Northern European seaports than any Atlantic Coast port,

the strategic situation at Montreal is incomparable. The investigators have correctly emphasized "the cross-roads of shipping lanes" as the proper location for such a utility as a free zone. Shipping from every sea and from every great trade route and shipping lane in the world comes to the port of Montreal and, as the foreign trade returns of Canada abundantly demonstrate, finds here immense tonnages of bulk and raw commodities, the products of mines, farms, forests and manufactories, to be carried for distribution in all the principal trading countries of the world. In addition, the two greatest railway systems in the world, at least in point of mileage and in extent of territory served and in the diversification of products carried, have their termini at the port of Montreal and, as well, operate important shipping lines over many of the most important maritime trade routes.

Converging also at the port of Montreal is the most extensive and the most successful system of inland navigation in operation in any part of the world, whose tonnages exceed in volume those passing through even the Panama and Suez Canals. These inland waterways constitute the only water shipping facilities, affording access to the ocean, enjoyed by the large populations of at least six or seven of the great states of America, which happen also to be the most populous and the greatest of the manufacturing states of the Republic, namely, Ohio, Michigan, Indiana, Illinois, Minnesota and Wisconsin, and very large areas of New York and Pennsylvania. Into these vast areas, constituting, from the point of view of a foreign trade zone at the port of Montreal, a foreign country for all purposes of trade, radiates a railway system serving and reaching a population of not less than fifty million inhabitants in less than a twenty-four hour radius.

It is clear, therefore, that the transport system already developed at Montreal to the highest point of efficiency, both ocean, rail and interior waterways extending a further twelve to fifteen hundred miles to the interior of the continent, fully answer the cardinal specifications of the investigators of the United States Shipping Board, and more.



LOOKING EAST FROM VICTORIA BASIN. THROUGH THE CENTRE SPAN OF THE NEW BRIDGE CAN BE
SEEN GRAIN ELEVATOR NO. 3

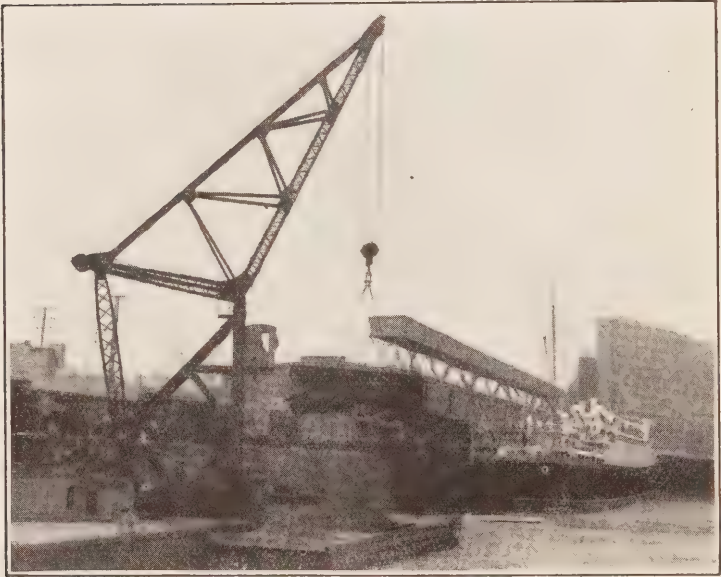
But there is another and a compelling factor present and operative at the port of Montreal which does not exist in any free trade zone now in operation nor in any possible site for such a utility available at any other American seaport. There is available now, or in process of development, an inexhaustible supply of hydro-electric current and power. This paramount factor in insuring one hundred per cent. efficiency to any foreign trade zone or free port, combined with the transport facilities described, definitely indicate the port of Montreal as the site of a foreign trade zone whose usefulness, efficiency and cheapness would insure an immediate accession of business and a steady growth from year to year.

There are, in fine, potentialities for developing a vast import and re-export trade, inbound cargo, over the St. Lawrence route to Montreal to be carried a further fifteen hundred miles and more inland for distribution in the vast areas tributary to the upper lakes by rail and water; and a physical and shipping set-up unmatched in any other seaport and which seem to require only the creation of a foreign trade zone to round out and fill in an incomparable picture.

But the prospect of success for a free port at Montreal is not limited to nor indeed dependent upon providing facilities to quicken the movement of overseas trade by the St. Lawrence route into large and populous areas of the United States. The new impulse to inter-imperial trade points definitely to this port as the entrepot wherein must be warehoused and from which will be transhipped into our own great consuming markets, west and north of Montreal, the constantly increasing supplies of commodities and merchandise which those countries abroad who trade with us will want to sell us in payment for their purchases.

Nowhere else in America are all the factors of success, by nature's decrees and by the enterprise of our people for generations, present as they are here. What is now needed is the will to translate them into still greater usefulness and profit. Initiative and direction alone are needed from the present generation of Empire statesmen who in due time will work

out a scheme of imperial reciprocity of trade. Since the days of many futile aspirations of the past, distance has been annihilated and the Canadian people have searched out markets beyond all the known seas. Their ships follow every ocean trade route and to such purpose that, per capita, they rank in the foreign trade of the world second to no other country.



HARBOUR COMMISSIONERS' 75-TON FLOATING CRANE

LAKES-ST-LAWRENCE WATERWAYS PROJECT

Throughout the year there was no abatement of public interest in the St. Lawrence seaway and power project and no cessation in the discussion which has been in progress upon both sides of the international line during the last eight years. Writers in the daily press, in weekly journals and in magazines, publicists upon the platforms and politicians in the Canadian Parliament and American Congress have carried on an almost ceaseless barrage. Not all of it has been much to the point, nor indeed much of it illuminating or helpful.

The activities of Congress have been mainly directed to the production of some, any, alternative to the St. Lawrence-Great Lakes programme which the governments of Canada and the United States have been endeavoring for some years to work out. The prime requisite of such alternative must be that it can be made to look attractive as coming within the designation of "All-American."

The completion of the Welland Canal, an entirely Canadian work wholly within Canada and of importance and magnitude rivalling any other similar work in the world, has had the effect of revivifying interest in the long obsolete and unused Oswego branch of the Erie barge canal. Associated with this is the creation of an ocean port in the recently organized port area of Albany at the Hudson River terminal of the barge canal. The Federal Government has announced the completion of the \$10,000,000 Hudson River dredging project affording a uniform 27 ft. channel to that port. Here an elaborate scheme of port development is being carried out which includes the provision of a grain elevator, docks upon both sides of the river, warehouses, fireproof sheds, cranes and all the appurtenances of a first class ocean port. The promoters have had much jubilation in finding and announcing that the new inland seaport can "now compete for Montreal's grain trade" since the latter port is more than 1,000 miles from the ocean, whereas Albany is but 157 miles.

During the Extra Session of Congress, a Resolution was passed by the House Rivers and Harbours Committee, directing the Corps of Engineers U.S. Army to examine and

report upon a proposal by which the Federal Government should acquire from the State of New York the existing Erie barge canal by gift or lease in consideration of the former authority undertaking to enlarge and improve the utility so as to afford a 14 foot draft, 12 feet over lock sills. It was said that these works could be carried out at a cost under \$50,000,-000, that is, an annual charge on capital account of say \$2,-500,000. The completion of the Welland Canal would then enable a new "All-American" shipway to be opened via Oswego to the Upper Lakes which would overcome the flight of locks at Lockport on the main Erie Canal.

It is said that the "practical" capacity of the canal is about 6,800,000 tons, the present tonnage carried is not more than half the rated capacity, half the latter again being interstate commerce. With the improvements contemplated the carried tonnage, it is estimated, can be increased to about 7,500,000 tons by the year 1938.

But this programme, as outlined, could not be undertaken until the transfer is first adopted by enactment of the State Legislature to be sanctioned by a referendum of the people of the State in two consecutive elections. The capital outlay of the State of New York upon this project is variously stated at from \$146,000,000 to \$200,000,000. With the new accessions of tonnage up to the year 1938 by reason of the Welland Canal and Federal operation further heavy outlay would become necessary. In that year of promise it would yet remain the barge canal, over 300 miles in length, "De Witt Clinton's ditch," and would still be no shipway.

Linked up with this project in Congress is the similar one for the acquisition of certain barge canal and river reaches in Illinois, owned by that State, which were projected as part, with the Chicago drainage canal the essential part, of the ambitious Lakes to the Gulf barge system. The State of Illinois, it is claimed, has invested \$20,000,000 in these projects and the Federal vote in aid now proposed is \$7,500,000. There is a co-partnership in Congress in the sponsorship of these projects and an initial appropriation is expected to be voted at the 1930 Session for carrying them forward.



AERIAL VIEW OF CENTRAL SECTION OF PORT

Chicago Sanitary District

Meantime, the year 1929 was made notable by the unanimous decision of the Supreme Court of the United States in the litigation carried on between the several States concerned and the Chicago Drainage District. The suit was for an injunction to restrain the Drainage District from diverting lake water for sewage disposal purposes in excess of what is required for maintaining navigation in the Chicago River. The Court finds that in "the absence of direct authority from Congress for a waterway from Lake Michigan to the Mississippi," the Drainage District could show no rightful interest in the maintenance of the diversion. The authority of the Secretary of War is limited to the permission of a sufficient diversion to avoid or prevent interference with navigation in the Chicago River which is really a part of the port.

The permit of 1925 temporarily allowing an increase of diversion to 8,500 c.f.s. in order to dispose of sewage of the district was granted by the Secretary because of the exigency which arose from the illegal increase in diversion beyond the amount allowed in the original permit, 4,167 c.f.s., by reason of the failure of the district to adopt means for disposing of its sewage and the consequent impairment of navigation in the river, unless the permit were granted.

"In these increasing diversions," says the Court, "the District defied the authority of the National Government vesting in the Secretary of War. And in so far as the prior diversion was not for the purpose of maintaining navigation in the Chicago River, it was without any legal basis, because made for an inadmissible purpose." The Secretary could not make mere local sanitation a basis for expanding or continuing diversion. Considering the limited scope of his authority, namely, the preservation and protection of navigation, "merely to aid the District in disposing of its sewage was not a justification."

The decision summarizes some of the findings in the Report of Master Charles Evans Hughes (to whom reference

was made by the Court to take evidence and find the facts) in the following significant paragraphs:

Damage to State Reviewed

The scope of the damage done by the lowering of lake levels through excessive diversion at Chicago, which has sometimes been as great as six inches, is indicated in the following quotation with respect to the losses of the complainant states, their citizens and property owners:

The Master, Mr. Hughes, finds that the damage due to the diversion at Chicago relates to navigation and commercial interests, to structures, to the convenience of summer resorts, to fishing and hunting grounds, to public parks and other enterprises, and to riparian property generally, but does not report that injury to agriculture is established.

He says that the great lakes and their connecting channels form a natural highway for transportation, having a water surface of more than 95,000 square miles, and a shore line of 8,300 miles, extending from Duluth-Superior, Wis., and from Chicago and Gary, Ind., to Montreal, at the head of deep-draft ocean navigation on the St. Lawrence; that there are approximately 400 harbors on the Great Lakes and connecting channels, of which about 100 have been improved by the Federal government; that the latter improvements consist in the excavation and maintenance of channels from deep water in the lakes to the harbor entrances; that inner or local harbors are located inside the Federal channels, and the depths in the inner harbors have been obtained and are maintained at local expense; that inner harbors are necessary to afford practical navigation; that extensive and expensive loading, unloading and other terminal facilities have been constructed in these various ports within the territory of the complainant states, on the great lakes, at local expense.

Could Have Handled More

The Master's report says that the water-borne traffic on the Great Lakes for 1923 consisted of 81,466,902,000 ton-miles of water haul and that consideration of individual loaded boats and of their respective dimensions shows that if water had been

available for an additional six inches of draft the fleet could have handled for the year 3,346,000 tons more than was actually transported, or, to put the matter in another light, the season's business could have been done with the elimination from service of about thirty freighters of the 2,000,-3,000-ton class, and that the lost tonnage of the total through business of the lakes for 1923, incident to a six-inch deficiency of draft, exceeded 4,000,000 tons, and that the average water-haul rate for the year was 88 cents a ton.

Court Points Out Duty

It therefore is the duty of this court, by an appropriate decree, to compel the reduction of the diversion to a point where it rests on a legal basis, and thus to restore the navigable capacity of Lake Michigan to its proper level.

The sanitary district authorities, relying on the argument with reference to the health of its people, have much too long delayed the needed substitution of suitable sewage plants as a means of avoiding the diversion in the future. Therefore they cannot now complain if an immediately-heavy burden is placed upon the district because of their attitude and course.

The situation requires the district to devise proper methods for providing sufficient money and to construct, and put in operation with all reasonable expedition, adequate plants for the disposition of the sewage through other means than the lake diversion.

Though the restoration of just rights to the complainants will be gradual instead of immediate, it must be continuous and as speedy as practicable, and must include everything that is essential to an effective project.

The Court, therefore, grants "a final, permanent, operative and effective injunction against diversion for sewage disposal," and in excess of that which may be required to maintain navigation in the river, "but that amount," says the Court, "is negligible as compared with 8,500 c.s.f., now being diverted."

Recognizing, however, the peculiar situation which has arisen by reason of the illegal diversion carried on through many years and the difficulty of peremptory rectification of the position and that time will be required therefor, the Court ordered a second reference to Mr. Hughes, as Master.

The Master was directed by the Court to conduct hearings, to make an exhaustive inquiry into all of the facts in suit, and to report with his recommendations. The report occupies a compendious volume and the recommendations, in brief, are that the final decree of the Court should require the Drainage District gradually to reduce its withdrawals of lake water until by the year 1938 and thereafter no more than 1,500 c.s.f. may be withdrawn. The authorization of the Secretary of War allowed 4,167 c.s.f. to be taken and there have been illegal withdrawals up to at present 8,500 c.s.f. The Drainage District is also to be required to bring its projects for sewage disposal to completion by the year 1938.

There will doubtless be Exceptions to the Report of the Master to be argued in Supreme Court, but it is well known that rarely will a Master's Report on facts be disturbed by the Court. So that the final disposition of this notorious and flagrant defiance of public and international right throughout 40 years appears to be at hand by the final decree of the Court of last resort.

It will, nevertheless, be noted that the canal project described in an earlier paragraph is an ingenious ruse to obtain the legislative sanction of Congress for the withdrawal of Lakes water, via the drainage canal, for purposes of navigation and power. Should this legislation pass Congress and escape a Presidential veto then the international and constitutional questions would remain to be litigated.

The litigation now about to be terminated was domestic; should the pending Bills in Congress become law and be found by the Supreme Court to be constitutionally within the competence of Congress, then the larger issue would inevitably arise as to the right of the United States Government in international law to authorize by Act of its Congress

such procedure as would result in the depletion and alteration in the flow of international waters and the diversion thereof from one watershed to another for any purpose whatever.

Bibliography of Seaway

The bibliography, already very extensive, of the St. Lawrence and Great Lakes Seaway has been enlarged by the issue of three important volumes, one of which appeared in the summer of 1929 and the other two soon after the close of the year.

"The St. Lawrence Navigation and Power Project," a bulky volume, issued from Washington by The Brookings Institution, on its title page bears the names of Harold G. Moulton, Charles S. Morgan and Adah L. Lee as authors. There are about 700 pages of text, these embracing discussion, exposition and argument as well as exceedingly copious documentation and appendices containing statistical material upon every phase of the inquiry. As in all works of this sort, material of this description is elaborated and tabulated in such mass and detail as to be often incomprehensible even to the trained reader, who is overwhelmed in the attempt to extricate himself from the statistical maze. The mass of material of this description which can be accumulated respecting any major problem is infinite in its variety and in its capability to be made to support any theorem which the investigators may wish to enforce. These materials in the present instance are doubtless carefully and conscientiously assembled, but the value of them is in the interpretation thereof, and the danger is that the statistical tables will be made to smother the cardinal facts. Adam Smith was not greatly confused with this class of material, and if William Hamilton Merritt and his pioneer successors in the creation and development of the canal system in Canada had been able to be confounded by the statisticians it is improbable that the Welland and St. Lawrence canals would ever have been built.

"The Brookings Institution—Devoted to Public Service through Research and Training in the Humanistic Sciences"—was incorporated in 1927. Robert S. Brookings is Chairman

and there is a "Board of Trustees," of amiable and impressive personnel, an "Advisory Council," a Vice-President and Treasurer, and finally a President, Harold G. Moulton. "The Institution will maintain a series of Co-operating Institutes, equipped to carry out comprehensive and inter-related research projects." The Trustees have a certain responsibility of administration, but by by-law they have made it clear that "the primary function of the Trustees is *not* to express their views upon the Scientific Investigation," etc., "but only to make it possible for such scientific work to be done under the most favorable auspices," that is, by Harold G. Moulton. "Major responsibility for formulating general policies and coordinating the activities of the Institution" is vested in the President. The latter official, Harold G. Moulton, by by-law "selects" the members of the Advisory Council. The Institute of Economics of the Brookings Institution was founded and endowed by the Carnegie Corporation of New York, for the single purpose—"namely, that the Institute shall be conducted with the sole object of ascertaining the facts about current economic problems," etc.; and Harold G. Moulton, President, is Director of the Institute.

Thus by a simple process of elimination all of the mechanism, findings and conclusions of a very elaborate and plainly well-fortified fabric for scientific and economic investigation have their initiation, origin, conception and final disposition in Harold G. Moulton, President of the Institution and Director of the Institute; and his staff selected by himself. There is no purpose to query the authority and entire competency of Mr. Moulton, but it is not reassuring that both the Institute of Economics and the Brookings Institution bestow only a negative imprimatur upon him and his works. It is a supreme effort in altruism in which everyone identified with the aims of the Institution and the Institute to achieve and to proclaim ultimate truth gracefully transfers all responsibility to Mr. Moulton.

Mr. Moulton's book achieved wide notice and discussion, as well as ardent commendation from those who found in his conclusions support of their opposition to the navigation as



THE MOTORCYCLE SQUAD OF THE HARBOUR COMMISSIONERS' POLICE FORCE

well as to the power features of the project. The main thesis, of course, concerned navigation, and very early it became manifest that Mr. Moulton was an ardent proponent of the rail as opposed to the water system of transit. An under-current of concern for the tribulations of the railway system of the United States runs through the volume, and it is not surprising to find that a major conclusion reached is that to expand and develop the existing waterway of the Great Lakes and St. Lawrence River is mere futility, so far as the Middle Western States are concerned, for it is demonstrable, from the statistical matter assembled in the book, that three super rail lines could be constructed from Chicago to the Atlantic seaboard for less than the cost of the proposed seaway, and that these could carry freight and commodities equivalent to three times as much as is claimed to be the maximum for the waterway. This will not be found to be very appealing reasoning to the 400 harbors, great and small, distributed throughout the 8,000 miles of shore line of the Great Lakes and St. Lawrence to Montreal, which have been and still are discharging a useful and profitable function to shipping and to commerce—even if they know that their tonnages will not go to Chicago to be carried by rail to the seaboard.

The prime difficulty with much of the argumentation concerning the utility or inutility of waterways and canal systems in the United States is that it is based upon the record and fate of obsolete, disjointed or local barge lines which could not survive the rail era. There is not in that country any waterway system comparable in any respect with the Great Lakes-St. Lawrence system. A continuous waterway flowing 2,500 miles to the ocean of more or less uniform draft throughout, by far the greater part of its course connected by comparatively short side canals or improved channels wherever obstructions occur, and floating in the seven months' season of navigation 100,000,000 tons of bulk commodities derived from its tributary territories, will not give place to any conceivable rail system even if the latter were otherwise practicable and desirable.

A totally different conception and purpose is manifest in the work of Fayette S. Warner, of the Political Science Department of the University of Pennsylvania. The title is, "The Future Movement of Ore and Coal in Relation to the St. Lawrence Waterway," issued by University of Pennsylvania Press. It is a study made under the direction of the Wharton School of Finance and Commerce, an institution having world-wide repute. The primary object of the Wharton School in making the study is stated to be that of throwing additional light on the question of whether the freight that would be available for shipment through the projected waterway would be sufficient to warrant the development of the project.

"In considering that question from the standpoint of the potential shipments of iron ore and coal, Mr. Warner has not ignored the fact that vast quantities of grain, stone and other commodities will be available for transportation through the proposed waterway connecting the Great Lakes directly with the Atlantic Ocean, and statistics bearing on this traffic are presented in the study," the School announced.

Ore Deposits Factor

"His estimate of a vastly increased potential tonnage by 1945, however, is based on his assumption that, at the present rate of consumption, the iron ore deposits of the Lake Superior district will be exhausted in the next twenty years and that this will result in the importation of millions of tons of iron ore to be brought in from South American and other overseas deposits.

"In addition, he forecasts a further increase in traffic through the exportation of large quantities of coal which, he points out, would be the logical commodity to utilize the vast amount of outbound shipping space created by the increase of importations by water."

Though the exhaustion of Lake Superior ore deposits has long been foreseen, and also the possibility that the Pennsylvania and Ohio furnaces might one day be closed, yet Mr.



ONE OF THE NEW WHITE FLEET OF THE CANADIAN NATIONAL STEAMSHIPS

Warner in this novel presentation has opened up a new angle to the seaway inquiry of arresting interest to Montreal and to the entire St. Lawrence region below Lake Ontario. With the concentration of cheap power in this region and the physical re-alignment of the iron and steel industry which he foresees, not only in the United States but in Canada, the industrial potentialities of Montreal district loom large indeed.

“The potential tonnages for this route, which at present are moving through more or less costly avenues of commerce, range from 20,000,000 tons minimum to 30,000,000 tons maximum. In spite of the obsolete equipment and adverse circumstances of operation of the present St. Lawrence route, nearly 8,000,000 tons passed over it in 1927, an increase of 600 per cent. during the last twenty-five years.

Predicts Exhaustion

“At our present rate of consumption, the relatively rich iron ore deposits of the Lake Superior district will be exhausted in the next twenty years. The leaner ores will have to bear the cost of beneficiation against the alternative of importing high grade foreign ores, to be used in mixing and supplementing the low grade ores coming from the Lake Superior district to the blast furnaces on the shores of Lake Erie if the Pennsylvania steel and iron industry is to be saved. It has been shown that from 10,000,000 to 15,000,000 tons of ore would move over the St. Lawrence route to fill this demand.

“This large bulk movement, together with other minerals inbound, will create a large quantity of shipping space outbound. When commodities which have a higher shipping value are not available to fill this space, a bulky commodity of lower value will be substituted. Coal is the commodity which fulfills these requirements, and it is estimated that from 5,000,000 to 7,000,000 tons of coal will move over this route.

“It is expected that a large tonnage of iron ore from South America will arrive at Lake Erie ports and that coal and coke will serve as the commodity for a backhaul. Furthermore,

since iron ore at present moves to Lake Erie ports in the open season, it can continue to move under this same seasonal arrangement.

Potential Tonnage

“It has been pointed out that the potential tonnages for the St. Lawrence route, which now are moving through other avenues, range from 20,000,000 tons minimum to 30,000,000 tons maximum.

“Even without anticipating any increase in these tonnages, they, together with the potential importation of iron ore tonnages of 10,000,000 to 15,000,000 and the potential backhaul coal tonnages of 5,000,000 to 7,000,000, which may be expected in 1945, provide the basis for an estimate that a minimum of 35,000,000 and a maximum of 52,000,000 tons would pass through the St. Lawrence waterway fifteen years from now if the project were completed. This tonnage estimate is larger than that which now moves through the Suez or Panama canals.”

“The improved St. Lawrence Channel will open navigation from the Atlantic Ocean to the Great Lakes for about 90 per cent of the world’s cargo-carrying vessels, and will connect the world markets with the producing area in Central North America by a lower cost method of transportation than now exists,” Mr. Warner states in summarizing his conclusions. Mr. Warner’s most interesting volume is buttressed with a very large number of maps, graphs and new statistical tables, most of them not to be found elsewhere and greatly illuminating the presentation of his argument. It is a constructive contribution to the discussion, detached, impartial and obviously without ulterior interest in the midst of an arid mass of propaganda and superficial political controversy.

A Canadian work

A more intimate type of work is the book brought out at the beginning of 1930 by a former President of the Harbour Commissioners, Major George Washington Stephens. It is

entitled "The St. Lawrence Waterway Project" and it was issued by Louis Carrier and Co. in Montreal, London and New York.

Its main purpose is to record historically the sequence of events affecting the Lakes and Waterway from the treaty of Utrecht, 1713, up to this time. As this had not been done before, Major Stephens assembled a mass of data invaluable to investigators and not readily accessible. There are also valuable comparative compilations of the various schemes which have been brought forward for the proposed navigation and power works in the international section of the St. Lawrence. Major Stephens, reserving all of the conditions and precautions which have come to be now universally insisted upon, is a firm believer in the necessity for the further development and expansion of the waterway both in respect to navigation and power.

The aim here is not to review the volumes noted above nor to analyse their contents in critical spirit. In each case they are comprehensive and inclusive so that a discussion of them in detail would require much space not here available. To indicate their general character and value as the outstanding discussions of the year is all that can be attempted.

IN MEMORIAM

Within the year the death occurred and was greatly deplored of two former Commissioners who gave many years of useful and unselfish service to the Harbour. Mr. W. G. Ross served as President from the year 1912 until his retirement late in 1921 to accept nomination to a seat in Parliament by the political party with which he identified himself. These were years of strenuous activity in the growth of the port and in the expansion of the facilities to be provided. There was also the adjustment of these to the unwonted accessions of new business occasioned by the war which was at once a test and a revelation of Mr. Ross' business genius and capacity. Mr. Ross' death occurred quite unexpectedly in the month of April, 1929, soon after his return from a winter holiday

while he was still at the zenith of his very active business career.

Following him, with the lapse of only a few months, his sole remaining colleague of his long term in the Presidency, Mr. Farquhar Robertson, passed away in August, 1929. The latter's service as Commissioner coincided with that of Mr. Ross in point of time, and they, with the late General Labelle, carried on affairs throughout the war period. Mr. Robertson had laboured zealously over a long lifetime in the many activities of a useful citizen in the place of his adoption. He was conspicuous in many public activities and his career was rounded out by his long period of office at the Harbour. The careers of both Commissioners were adequately dealt with by the city press and need not be recounted in this place, where it will suffice to record the appreciation of their fellow-citizens in general and of their immediate successors in office.

It is also proper to record in this place the loss which the permanent staff at the Harbour sustained in the death of the late secretary, Mr. T. F. Trihey. Mr. Trihey filled that difficult and arduous office from early in the year 1924 until his retirement under superannuation in the month of July, 1927. He had continued, however, active in various special services at the Harbour until within a few months of his death, which occurred on October 16th, 1929. Mr. Trihey had risen through nearly 30 years' service in junior posts by successive promotions until he achieved the highest position in the gift of the Commissioners. His capability and fidelity as an official were recognized upon every hand.

SASKATCHEWAN ROYAL GRAIN ENQUIRY COMMISSION

Early in 1929, while the Annual Report of this Commission for 1928 was going to press, the Saskatchewan Royal Grain Enquiry Commission was in session in the West. Reference to their proceedings, and to a communication forwarded by the President of the Harbour Commissioners of Montreal, requesting that before issuing any report referring to the handling of grain in Montreal, a session of the Commission should be held here, was made in the Annual Report for 1928.

Subsequently the Saskatchewan Royal Grain Enquiry Commission came to Montreal, and sat here from July 20th to 25th. The Commission was composed of Hon. J. T. Brown, Chief Justice, Court of King's Bench, Saskatchewan, Chairman; Mr. John A. Stoneman, President, United Farmers of Canada (Sask. Section), and Professor W. J. Rutherford, Dean of Agriculture, University of Saskatchewan, Commissioners, with Mr. H. F. Thomson, K.C., Chief Counsel.

Elaborate evidence was taken by the Commission as to methods and practice affecting the handling of grain in the Harbour Commissioners' elevators at Montreal, the most exhaustive information being supplied by the Harbour Commissioners' officers under oath, supplemented by a number of detailed statistical tables and charts, covering every operation of a physical and clerical nature touching the export of Canadian grain through the Harbour of Montreal. Exhaustive evidence was also given by representatives of the grain exporters, Grain Inspection officials, transportation agencies, both water and rail, stevedoring firms and others interested in the handling of grain.

FINANCIAL STATEMENT

The Statement of Income and Expenditure, for the Year ended 31st December, 1929, exhibits fully the Financial Transactions of the Board for the Period. The same under the Certificate of the Acting Comptroller, and the Secretary, verified by the Auditors, follows herewith:

$\lambda_{11} = \text{linear distance at } 1000 \text{ ft.}$
 $\lambda_{1000} = \text{linear distance at } 1000 \text{ ft.}$

$$\begin{aligned} \frac{d}{dt} \left(\frac{1}{2} \dot{\theta}^2 \right) &= \dot{\theta} \ddot{\theta} \\ \frac{d}{dt} \left(\frac{1}{2} \dot{\theta}^2 \right) &= \dot{\theta} \ddot{\theta} \\ \frac{d}{dt} \left(\frac{1}{2} \dot{\theta}^2 \right) &= \dot{\theta} \ddot{\theta} \end{aligned}$$

continued

THE YEAR'S ACTIVITIES

The year 1929 will long be remembered by those concerned in Harbour and transportation matters in Canada, and by officials of the various agencies occupied with the sale and routing of export shipments of grain. The idiosyncrasies of the grain markets in the Summer and Fall of 1929, and the various issues at stake, the policies pursued by those responsible for holding available stocks of Canadian grain in this country, and the world-wide reactions, having repercussions in many distant countries, notably the Argentine and Australia and India, have been discussed over a period of nearly a year in the press of two or three continents; they have formed the basis of Parliamentary discussion and elaboration in more than one legislative body; and arguments, not untinged with bitterness, as to the pros and cons of the matter have been waged in wordy warfare. It is not proposed in a document of this nature to add to that discussion or to advance theories, either fresh or stale, to the already voluminous quantity that have been contributed by interested and disinterested persons. But inasmuch as Montreal is a seaport having as one of its principal activities the export of grain, the effect which the loss of much of that business during the season of navigation of 1929 had on the total year's activity of the Port, must be noted.

Suffice it to say that whereas revenue of the Commissioners, number of vessels trading to the Port, net registered tonnage of shipping, and tonnage of export commodities, all decreased, and such decreases were directly attributable to the grain situation already referred to, the general business of the Harbour, exclusive of grain, recorded a satisfactory normal increase. Import tonnage, domestic tonnage, number of railway cars handled, imports of coal, of bananas, and other special commodities, and exports of hay, etc., increased over any previous year. New vessels were placed on the Montreal route, notably by the Canadian Pacific Steamships and the Canadian National Steamships, and passenger carryings to and from the Port gained considerably over previous years.

All of which is indicative of the fact that while for many years the major portion of the Harbour's business has con-

sisted of grain (in 1928 the tonnage of this commodity having been equivalent to practically half the total import, export and domestic tonnage handled), Montreal is, par excellence, an ocean port, serving a vast area in Canada and the United States, and, as such, is prepared to handle a diversified commerce. Imports for the first time in the Port's history, in 1929 exceeded 3,000,000 tons, and included 619 different commodities. Exports, which consisted of 460 commodities, decreased by 3,419,212 tons, and of this amount, the decrease in grain represented 3,346,487 tons. When decreases in exports of automobiles and flour are allowed for, it is found that exports of other commodities increased by some 145,000 tons.

The one redeeming feature of the grain situation in the year under review was the continued leadership of Montreal in the list of North American seaports equipped to export grain. All the United States Atlantic ports show decreased quantities compared with the previous year, and it is perhaps significant that increased business was experienced only by the Ports of Galveston and New Orleans, shipments from which were confined to grain of United States origin, and consisted for the most part of winter wheat, of which an abundant crop was harvested this year in the States tributary to the Gulf.

The following statement gives grain deliveries from elevators at Montreal and United States ports for the calendar years 1928 and 1929:—

	1929	1928
Montreal.....	90,694,208 bus.	211,295,379
New York.....	68,895,992 "	84,782,462
Galveston.....	35,746,057 "	22,432,287
New Orleans.....	18,279,799 "	15,336,537
Baltimore.....	17,600,049 "	24,167,184
Philadelphia.....	9,419,595 "	13,240,767
Boston.....	4,104,479 "	5,260,227
Portland, Me.....	2,427,655 "	2,992,349
Newport News.....	1,623,785 "	4,054,662
Mobile.....	1,115,659 "	(no report)

Revenue

The revenue of the Commissioners in 1929 was seriously affected by the decreased quantities of grain passing through the elevators and by the fewer number of cars of grain offering for handling on the Commissioners' railway system. The steady and consistent growth of the past twenty-five years in the Harbour revenues did not continue, and revenue dropped to a figure lower than that for either of the two previous years. Stringent measures of economy were adopted so as to keep necessary expenditures down to the lowest figures consistent with efficient operation, and resulted in a reduction of \$126,031.18 in operating expenditures, but interest charges increased by \$131,400.97 and sinking fund by \$26,420.00. The net result was that, for the first time in many years, the year's operations resulted in a deficit of \$167,688.58.

Gross revenues since 1921 have been as follows:—

1921.....	\$2,891,274.42
1922.....	3,460,810.87
1923.....	3,721,159.99
1924.....	4,382,115.25
1925.....	4,749,100.69
1926.....	4,632,599.92
1927.....	5,453,951.56
1928.....	5,589,327.12
1929.....	5,089,561.17

Ships and Shipping Tonnage

All classes of ships, Transatlantic, Coasting and Inland, and net registered tonnage of each class, decreased in 1929, and this notwithstanding the fact that liner services to Montreal were more attractively maintained than at any time in the history of the Port. The decrease was mainly confined to tramp vessels, as during the later months of the season charterings for grain cargoes were lamentably few. Coasting ships and tonnage were almost equal to 1928, and the drop in inland shipping was of course explained by the inability of owners to get grain cargoes unloaded at Montreal, due to causes explained elsewhere in this Report.

The following statement gives a picture of shipping at the Port in recent years:—

Year	Ocean-going Vessels	Net Regd. Tonnage	Total	
			Ocean-going and Inland Vessels	Total Net Regd. Tonnage
1923.....	1,082	3,683,720	6,691	11,879,028
1924.....	1,223	4,096,332	7,014	15,312,096
1925.....	1,255	5,104,313	7,212	14,782,476
1926.....	1,421	4,221,730	7,618	16,667,324
1927.....	1,610	4,992,486	7,798	17,322,444
1928.....	1,607	5,494,062	7,480	19,229,465
1929.....	1,283	4,637,000	6,368	17,802,829

Tonnage of Merchandise Handled

A splendid increase in tonnage of imports, which reached their highest figure since the Port's beginning, a satisfactory increase in tonnage of domestic merchandise, and a decrease of 3,419,212 tons in exports, of which 3,346,487 tons was accounted for by decreased grain exports, sums up the situation in regard to merchandise handled at the Port in the season of navigation of 1929. Export tonnage this year was at its lowest figure for the past ten years.

There follows a statement of tonnage of import, export and domestic merchandise over a period of years:—

	Import tons	Export tons	Domestic tons	Total tons
1921.....	851,444	4,122,253	1,250,227	6,223,924
1922.....	1,702,580	5,043,877	1,838,674	8,585,131
1923.....	1,421,295	4,270,226	1,815,351	7,506,872
1924.....	1,472,933	5,594,310	1,918,346	8,985,589
1925.....	2,394,311	5,265,151	1,477,819	9,137,281
1926.....	2,028,162	4,549,835	2,632,702	9,210,699
1927.....	2,693,535	6,175,485	3,052,153	11,921,173
1928.....	2,543,685	6,838,108	3,207,333	12,589,126
1929.....	3,256,991	3,418,896	3,260,985	9,936,872

Coal Receipts

Total receipts of coal at the Harbour during the season of navigation amounted to 2,275,424 tons, an increase over the previous year of about 100,000 tons. British anthracite increased from 359,253 tons in 1928 to 501,503 tons in 1929, and Russian anthracite increased from 5,904 tons in 1928 to 83,619 tons in 1929. American bituminous also increased, while Canadian bituminous and British bituminous both were less than in the previous year. No German or South African anthracite was received in 1929, although small quantities of such coal were received in 1928. The unloading of most of the British and Russian anthracite was done by the Commissioners' Browning locomotive cranes, which are available for this purpose.

Quantities of coal imported in 1929 were as follows:—

Canadian bituminous.....	1,543,765 tons
British anthracite.....	501,503 “
American bituminous.....	85,589 “
Russian anthracite.....	83,619 “
American anthracite.....	34,152 “
British bituminous.....	26,796 “

Railway Traffic

Despite a decrease of 11,000 cars of grain, the total number of cars handled on the Harbour Commissioners' railway system in 1929 was greater by 2,345 than in the previous year. During the first three months of the year, volume of rail traffic was so much greater than even during the exceptional activity of this period in 1928, that an increase of nearly 11,000 cars was realized the indications pointing to a season of outstanding results. But the ensuing slump in rail grain traffic reduced this margin considerably, and the results for the year would have been less than in 1928 had it not been for betterment in the movement of through local traffic, and an exceptionally heavy movement of hay for export. Hereunder is shown number of cars handled on the railway system since 1921:—

1921.....	143,564 cars
1922.....	200,593 “
1923.....	216,382 “
1924.....	225,377 “
1925.....	251,586 “
1926.....	205,481 “
1927.....	195,853 “
1928.....	240,622 “
1929.....	242,967 “

New Works

The usual reports of Engineering activities during the year will be found in the Engineering Report. Much important work was done, of which complete details are given, amongst the outstanding items of new work having been:—

Continuation of Bickerdike Pier Extension. Two cribs, 112'-6" long were sunk and raised to cope elevation 119.

Continuation of Windmill Point Wharf Extension. Two cribs, 112'-6" long, were sunk and raised to cope elevation 119. The coal towers which previously occupied the site of these new cribs were demolished, the intention being to extend the grain conveyor gallery at Elevator "B" along the entire face of Windmill Point wharf.

Continuation of Reconstruction of Upstream Side, King Edward Pier. That portion of the scheme involving the sinking of steel caissons and construction of concrete cope wall was brought to a successful completion during 1929. Three concrete cribs of varying lengths were sunk, at the outer end of the Pier and raised to cope elevation 108 just prior to the freezing up of the Harbour.

Continuation of Shore Wharf Construction, Sections 33-34. Two cribs were sunk, and the concrete superstructure over these and eight cribs previously sunk was completed to high level, with all accessories, thus completing 1,142 lin. ft. of new wharf.

Reconstruction of Laurier Pier. This necessary and difficult undertaking was started in 1929, four cribs having been sunk on specially prepared crib seats, matted with bags filled with stone. To overcome special construction difficulties at this point, where the current of the river is strong, a device known as a "current diverter" was employed, which necessitated the use of 82 concrete piles.

Completion of 1,000 ft. shore wharf, Sections 56-58. The superstructure of this important new section of wharf, for which the cribs were laid in 1928, was completed during the season, 1,018 lin. ft. of wharf having been finished.

A new industrial wharf was commenced for the Sylvestre Oil Company at the foot of Dennis St., Montreal East. One crib, 107 ft. long, was sunk and raised to elevation 104.

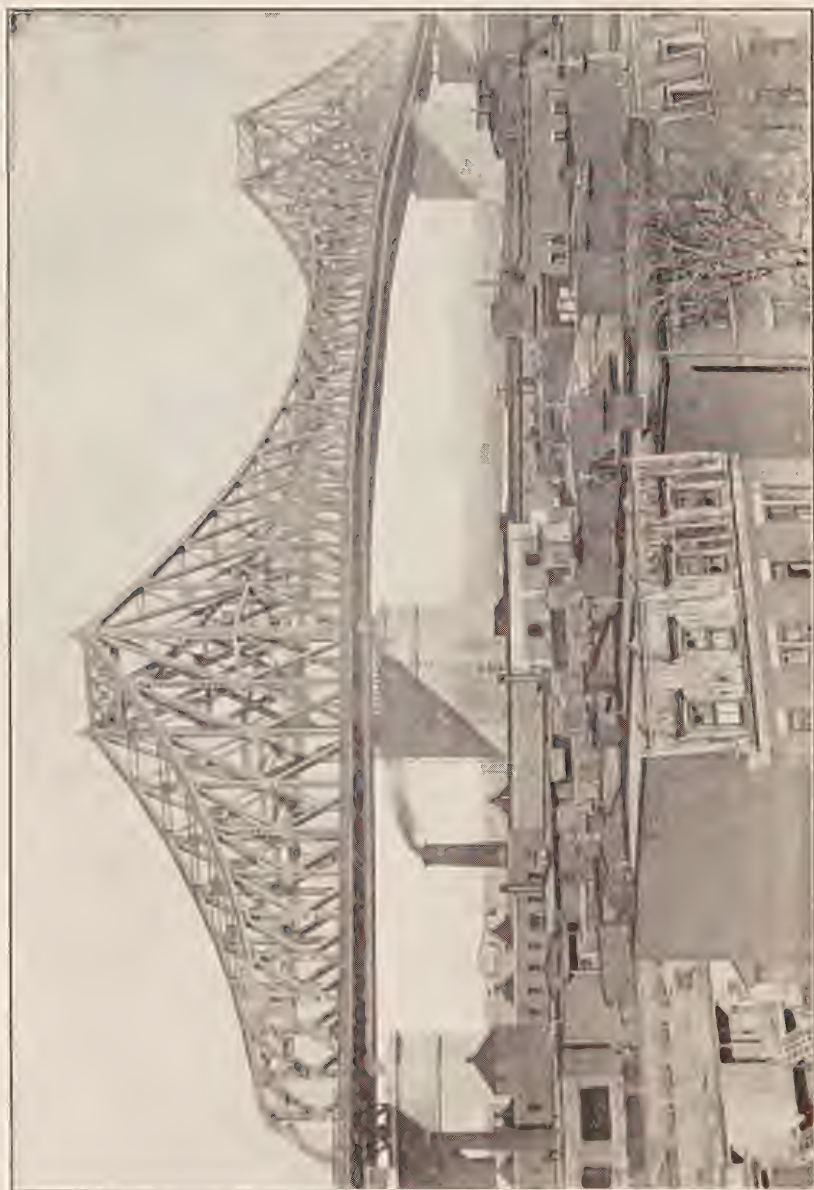
The only buildings undertaken or completed during the year were the extension to Shed No. 15, which was finished in 1929, and a new rest and office building at Elevator No. 1, which was constructed during the year.

A Fire Protection System was installed at the Guard Pier, consisting of a pumping station with two pumps, 1,500 ft. of 6" water pipe, 5 hydrants and necessary hose and reels.

New travelling grain loaders were erected at Galleries 7 and 9; the installation of conveyor equipment was completed in the extension to Gallery 15, and the foundations of a new Car Puller were constructed at Elevator No. 3 Extension.

NEW MONTREAL HARBOUR BRIDGE

The ensuing pages of this Report contain a description of the work done during the year on the new Montreal Harbour Bridge, from which it will be seen that 1929 saw the practical completion of this project. Finishing touches alone remain to be done at the end of 1929, which means that during 1930 the long awaited opening of this utility to the public will become a *fait accompli*.



THE CENTRAL SPAN TOWERING ABOVE SURROUNDING BUILDINGS

MONTREAL HARBOUR BRIDGE

Statistical Data of Interest

Length of Bridge—11,236 ft. or $2\frac{1}{8}$ miles.

Length of main cantilever span—1,097 ft. centre to centre of main piers, with two 420 ft. anchor arms.

Length of deck spans in approaches— 12 of 245 ft.

2 of 200 ft.

3 of 150 ft.

7 of 125 ft.

14 of 90 to 113 ft.

Channel span—1,000 ft. clear between wharf and river pier.

Clearance above high water—162 ft. for the central 500 ft., and 156 ft. at wharf side.

Width of clear roadway—36 ft. $10\frac{1}{2}$ in. between curbs.

Width of avenues for tramways or busses—12 ft. each.

Width of sidewalks—5 ft. each.

Total width between outside fences on deck spans—72 ft. 5 in.

Main span trusses—66 ft. 6 in. centres.

Height of main posts—162 ft. centres of chords.

Height from top of pier to top of pinnacle—184 ft. 7 in.

Height from coping of wharf to top of pinnacle—318 ft.

Height from low water to top of pinnacle—340 ft.

Weight of steel in bridge and pavilion—33,267 tons.

Yardage of concrete in piers and pedestals—113,200 cu. yds.

"	"	"	in pavilion	9,000	"	"
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"	"	"	in roadway and railings	13,000	"	"
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Yardage of cut stone in piers	17,500	"	"
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Yardage of gravel, etc., in fills	125,000	"	"
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Quantity of paint necessary to give Bridge one coat—8,500 gal.

Total number of rivets driven—about four million.

First sod turned 26th May, 1925.

Floor of bridge completed 7th December, 1929.

Date fixed for official opening of bridge—24th May, 1930.

Number of piers—26 with 2 abutments and 56 pedestals and 200 ft. of concrete viaduct.

Number of pneumatic caissons—8, including one of the biggest ever built.

GRAIN ELEVATOR SYSTEM

In the Annual Report for 1928, in the section devoted to analysis of grain export movement, we pointed out that the outstanding feature of the year's business in the Port of Montreal was the shipment of grain for export. This year, on the contrary, we are compelled to state that the outstanding feature of the year's business in 1929 was the severe shrinkage which occurred in the volume of grain exported from the Port of Montreal as compared with any of the eight immediately preceding years. Grain deliveries from the elevators since 1921 reveal this condition at a glance:—

1921.....	138,453,980 bus.
1922.....	155,035,817 “
1923.....	120,107,990 “
1924.....	165,139,399 “
1925.....	166,212,335 “
1926.....	135,897,882 “
1927.....	195,247,914 “
1928.....	211,295,379 “
1929.....	90,694,208 “

Comparison of the total deliveries from each of the Commissioners' four grain elevators in 1928 and 1929 is illuminating, viz.:—

	1928	1929
	bushels	bushels
Grain Elevator No. 1.....	46,393,901	21,904,778
“ “ No. 2.....	62,517,346	28,480,695
“ “ No. 3.....	47,856,010	21,023,646
“ “ “B”.....	54,528,122	19,285,089

The effect which this condition had on the total export tonnage of the Port is strikingly illustrated by the fact that of the total decrease of 3,419,212 tons in exports, compared with 1928, ninety-eight per cent., or 3,346,487 tons, is accounted for by grain alone.

Monthly Grain Deliveries

At the commencement of the season of navigation, grain deliveries maintained a very satisfactory flow, although no phenomenal activity was experienced. The elevators had been well filled with grain for winter storage from the close of the previous season, and in addition, considerable grain was stored in bottoms in the Port of Montreal, and at points on the Lakes. These were unloaded as fast as the export flow allowed, but in a few weeks there resulted an increase of daily arrivals from the Canal over the number of lake vessels which could be unloaded. Early in June, it became apparent that the smooth functioning of the Canadian export grain movement, so satisfactorily operated in preceding years, was undergoing a change. Orders for delivery to ocean vessels fell off, and a condition of approximate stagnation soon resulted. The Harbour throughout the Summer and Fall of 1929 presented a dreary picture indeed, to eyes which had been accustomed to hustle and well-regulated, efficient activity. Large numbers of canal carriers were tied up at every available berth in the Harbour, and it was no uncommon thing to have them wait weeks, and in some cases months, before being unloaded. From the end of June until the close of the year, the grain elevators were almost idle. Many of the inland water transportation companies discharged their crews, and tied up their vessels, to save or reduce ruinous overhead expenditure.

Total grain deliveries from the four grain elevators during the combined months of August, September, October and November, 1929, amounted to 31,272,862 bushels, which was less by several millions of bushels than the amount shipped in any single one of the same months in 1928, and compares with approximately 144,000,000 bushels delivered during the same period in 1928.

The sudden falling off in exports is readily seen by the following statement of deliveries of grain by months during the seasons of navigation 1928 and 1929:—

	1928	1929
	bushels	bushels
May	19,265,231	21,210,126
June	21,355,610	19,808,745
July	23,499,851	14,444,853
August	35,160,744	8,009,182
September	34,615,828	5,999,027
October	37,802,396	8,460,286
November	36,364,851	8,804,367

Daily Handling

During 1928, on twenty-two different days, total receipts and deliveries at the elevators were in excess of 3,000,000 bushels. In that year the largest day's handling amounted to 4,005,733 bushels, made up of 1,760,417 bushels received, and 2,245,316 bushels delivered. In 1929, combined receipts and deliveries on no day exceeded 3,000,000 bushels, the largest day having been May 22, when receipts amounted to 976,221 bushels, and deliveries to 1,566,453 bushels, a total of 2,542,674 bushels. On only 14 days during the season did combined receipts and deliveries amount to more than 2,000,000 bushels, and the latest of such dates was July 9th. The record of these 14 days follows:—

		Receipts	Deliveries	Handling
		bus.	bus.	bus.
May	17	843,391	1,178,637	2,022,028
"	18	1,176,563	892,387	2,068,950
"	21	1,267,502	1,243,936	2,511,438
"	22	976,221	1,566,453	2,542,674
"	23	1,250,437	1,217,943	2,468,380
"	28	1,267,571	1,152,804	2,420,375
"	29	1,088,085	1,245,646	2,333,731
"	31	966,106	1,571,872	2,537,978
June	7	894,372	1,130,405	2,024,777
"	10	801,239	1,474,752	2,275,991
"	12	942,536	1,309,635	2,252,171
"	21	1,060,284	1,227,779	2,288,963
July	4	1,004,239	1,001,015	2,005,254
"	9	1,044,549	970,831	2,015,380

Total deliveries, amounting to 90,694,208 bushels, included the following quantities of wheat and coarse grains:—

Wheat.....	63,404,336 bus.
Barley.....	13,635,315 “
Oats.....	8,238,658 “
Corn.....	2,703,031 “
Rye.....	2,125,491 “
Flax.....	552,688 “

Wheat Deliveries

1925.....	83,900,812 bus.
1926.....	91,771,734 “
1927.....	119,113,426 “
1928.....	145,076,783 “
1929.....	63,404,336 “

Water and Rail Borne Grain

The reduction in exports naturally affected water and rail borne grain totals in 1929, and both number of vessels and number of cars show proportionate decreases from the previous year. The percentage of water-borne grain remains, however, approximately the same as in previous seasons of navigation.

	No. of Vessels	Bushels	No. of Cars	Bushels	Percent- age of Total by Water
1923.....	1,147	74,631,578	27,631	45,376,412	62%
1924.....	1,606	112,020,615	28,276	53,118,784	68%
1925.....	1,637	124,827,099	19,554	38,974,626	75%
1926.....	1,471	104,674,724	16,684	31,223,158	77%
1927.....	2,246	159,071,036	18,725	35,216,274	81%
1928.....	2,156	163,429,223	30,231	53,887,651	78%
1929.....	855	69,800,508	11,618	20,628,281	78%

Destination of Export Grain

Grain exported by vessel from Montreal in 1929 was carried to fifteen different countries, as compared with twenty-one countries of destination in 1928. Thirteen of these points

of consignment imported less grain from Montreal than in the previous year, the only exceptions being France and India, which recorded a trifling increase. No grain was shipped to Russia, Syria, Malta, Morocco, Finland or Palestine in 1929, although all these countries had been importers of moderate quantities in 1928.

Great Britain again imported the largest quantity of all grain from Montreal, 21,531,464 bushels, of which 17,718,000 bushels was wheat. Belgium and Holland are both represented by quantities of about 13,600,000 bushels of grain, Belgium's quota including 11,657,654 bushels of wheat, while Holland took 5,167,000 bushels of wheat. Italy imported 10,727,331 bushels, all of which was wheat. Germany recorded the greatest reduction from the previous year, having taken only 7,426,269 bushels in 1929 as compared with 30,457,927 bushels in 1928, equivalent to a decrease of 77%. Spain shows the greatest percentage decrease, 91%.

The following statement gives a comparison of the quantities of grain consigned to various countries in 1928 and 1929 with percentage of decrease in 1929:—

	1928 Bushels	1929 Bushels	Percentage of decrease
Great Britain.....	42,277,247	21,531,464	49%
Holland.....	33,869,224	13,624,293	61%
Germany.....	30,457,927	7,426,269	77%
Italy.....	29,419,832	10,727,331	64%
Belgium.....	23,282,921	13,684,796	42%
Greece.....	7,913,546	2,691,443	66%
Spain.....	6,631,913	649,772	91%
Norway.....	4,964,984	1,420,195	72%
France.....	4,513,580	4,933,025	..
Portugal.....	2,299,711	284,618	87%
Sweden.....	1,990,166	294,620	85%
Ireland.....	1,399,469	911,599	35%
Russia.....	1,114,945	....	100%
Denmark.....	995,012	393,771	61%
Turkey.....	766,474	230,000	70%

	1928 Bushels	1929 Bushels	Percentage of decrease
Syria.....	596,364	.....	100%
India.....	253,867	252,699	..
Finland.....	170,937	.....	100%
Malta.....	164,267	.....	100%
Morocco.....	112,608	.....	100%
Palestine.....	61,599	.....	100%

**SUMMARY OF GRAIN HANDLING,
ELEVATORS 1, 2, 3 and B—1929**

	C.N.R.	C.P.R.	Total Cars	Vessels	Receipts bus.	Deliveries bus.
January.....	152	57	209	.....	331,092	632,425
February....	217	61	278	.....	439,424	498,765
March.....	114	295	409	.....	622,336	510,402
April.....	28	69	97	7	689,095	888,677
May.....	1,040	1,394	2,434	201	19,645,433	21,210,126
June.....	1,539	1,812	3,351	168	20,248,064	19,808,745
July.....	976	1,127	2,103	133	14,975,376	14,444,853
August.....	309	470	779	88	8,445,785	8,009,182
September...	200	190	390	62	6,300,628	5,999,027
October.....	380	398	778	80	8,024,736	8,460,286
November...	421	207	628	98	8,632,395	8,804,367
December...	137	25	162	18	2,074,425	1,427,353
	5,513	6,105	11,618	855	90,428,789	90,694,208

SUMMARY OF GRAIN HANDLING

Grain Elevator No. 1 — 1929

	Receipts bus.	Deliveries bus.
January.....	6,756	115,276
February.....	159,239	256,891
March.....	328,459	166,295
April.....	191,033	226,018
May.....	4,924,679	4,996,633
June.....	3,855,800	3,600,806
July.....	3,852,427	3,829,086
August.....	2,732,015	2,757,199
September.....	1,862,753	1,836,861
October.....	1,853,841	1,898,463
November.....	2,216,671	1,945,453
December.....	397,383	275,797
	<hr/>	<hr/>
	22,381,056	21,904,778

	Receipts		Deliveries
Water.....	20,380,388 bus.	Conveyor..	19,662,385 bus.
		Cars.....	1,522,036 “
Rail.....	2,000,668 “	Teams....	713,754 “
		Bags.....	6,603 “
	<hr/>		<hr/>
	22,381,056		21,904,778 “

First vessel unloaded April 29th, 1929.

Last vessel unloaded December 7th, 1929.

247 steamers	}	247 vessels — 20,380,388 bus.
... barges		
532 C.N.R. cars	}	1,154 cars — 2,000,668 “
622 C.P.R. cars		
		<hr/>
		22,381,056 “

SUMMARY OF GRAIN HANDLING

Grain Elevator No. 2 — 1929

	Receipts	Deliveries
	bus.	bus.
January.....	149,489	247,009
February.....	81,616	175,683
March.....	162,777	182,802
April.....	302,368	452,655
May.....	5,509,718	5,491,693
June.....	6,069,927	6,325,894
July.....	4,335,019	4,109,320
August.....	2,671,385	2,745,549
September.....	2,244,814	2,243,490
October.....	2,578,228	2,592,419
November.....	2,910,657	3,094,766
December.....	502,940	819,415
	<hr/>	<hr/>
	27,518,938	28,480,695

	Receipts	Deliveries
Water.....	21,797,414 bus.	Conveyor.. 25,023,016 bus.
		Cars..... 1,916,541 “
Rail.....	5,721,524 “	Teams.... 496,657 “
		Bags..... 1,044,481 “
	<hr/>	<hr/>
	27,518,938 “	28,480,695 “

First vessel unloaded April 18th, 1929.

Last vessel unloaded December 7th, 1929.

268 steamers	}	268 vessels — 21,797,414 bus.
... barges		
641 C.N.R. cars	}	3,167 cars — 5,721,524 “
2,526 C.P.R. cars		
		<hr/>
		27,518,938 “

SUMMARY OF GRAIN HANDLING

Grain Elevator No. 3 — 1929

		Receipts bus.	Deliveries bus.
January.....		.....	66,294
February.....		113,441	30,367
March.....		7,301	30,831
April.....		77,480	89,358
May.....		4,609,782	5,660,732
June.....		5,854,974	5,363,670
July.....		3,148,066	3,146,496
August.....		1,590,010	1,327,923
September.....		1,492,044	1,472,665
October.....		1,631,772	1,849,039
November.....		1,973,586	1,785,236
December.....		399,220	201,035
		<hr/>	<hr/>
		20,897,676	21,023,646

		Receipts	Deliveries
Water.....	14,368,038 bus.	Conveyor..	18,989,571 bus.
		Cars.....	1,693,283 “
Rail.....	6,529,638 “	Teams....	295,896 “
		Bags.....	44,896 “
		<hr/>	<hr/>
		20,897,676	21,023,646

First vessel unloaded April 19th, 1929.

Last vessel unloaded December 6th, 1929.

166 steamers	}	166 vessels — 14,368,038 bus.	
... barges			
622 C.N.R. cars			
2,957 C.P.R. cars			
		3,579 cars —	6,529,638 “
		<hr/>	
		20,897,676	“

SUMMARY OF GRAIN HANDLING

Grain Elevator "B"—1929

	Receipts bus.	Deliveries bus.
January.....	174,847	203,846
February.....	85,128	35,824
March.....	123,799	130,474
April.....	118,214	120,646
May.....	4,601,254	5,061,068
June.....	4,467,363	4,518,375
July.....	3,639,864	3,359,951
August.....	1,452,375	1,178,511
September.....	701,017	446,011
October.....	1,960,895	2,120,365
November.....	1,531,481	1,978,912
December.....	774,882	131,106
	<hr/> 19,631,119	<hr/> 19,285,089

	Receipts		Deliveries
Water.....	13,254,668 bus.	Conveyor..	18,013,781 bus.
		Cars.....	1,151,492 "
Rail.....	6,376,451 "	Teams....	117,274 "
		Bags.....	2,542 "
	<hr/> 19,631,119 "		<hr/> 19,285,089 "

First vessel unloaded April 30th, 1929.

Last vessel unloaded December 6th, 1929.

174 steamers	}	174 vessels —13,254,668 bus.
... barges		
3,718 C.N.R. cars		
.... C.P.R. cars		
		3,718 cars — 6,376,451 "
		<hr/> 19,631,119 "

SUMMARY OF GRAIN HANDLING
Grain Elevators 1, 2, 3, and "B" 1929

		Receipts bus.	Deliveries bus.
January.....		331,092	632,425
February.....		439,424	498,765
March.....		622,336	510,402
April.....		689,095	888,677
May.....		19,645,433	21,210,126
June.....		20,248,064	19,808,745
July.....		14,975,376	14,444,853
August.....		8,445,785	8,009,182
September.....		6,300,628	5,999,027
October.....		8,024,736	8,460,286
November.....		8,632,395	8,804,367
December.....		2,074,425	1,427,353
		<hr/>	<hr/>
		90,428,789	90,694,208

	Receipts		Deliveries
Water.....	69,800,508 bus.	Conveyor..	81,688,753 bus.
		Cars.....	6,283,352 "
Rail.....	20,628,281 "	Teams....	1,623,581 "
		Bags.....	1,098,522 "
	<hr/>		<hr/>
	90,428,789 "		90,694,208 "

First vessel unloaded April 18th, 1929.

Last vessel unloaded December 7th, 1929.

855 steamers	}	855 vessels — 69,800,508 bus.
... barges		
5,513 C.N.R. cars		
6,105 C.P.R. cars	}	11,618 cars — 20,628,281 "
		<hr/>
		90,428,789 "

Stock in Elevators (at 31st December, 1929)—
13,135,045 bushels.

SUMMARY OF GRAIN RECEIPTS, ELEVATORS 1, 2, 3, & B—1929

	WHEAT	OATS	BARLEY	CORN	RYE	FLAX	OTHER	TOTAL Bushels
January	155,930	70,675	6,204	40,001	51,276	.....	7,006	331,092
February	189,888	51,160	9,961	13,767	169,842	.....	4,806	439,424
March	503,115	38,765	1,312	21,225	53,262	.....	2,657	622,336
April	526,593	152,569	.....	9,933	.....	.....	.....	689,095
May	14,996,828	2,909,381	1,391,648	123,016	173,437	51,123	.....	19,645,433
June	13,546,553	2,660,839	2,772,685	354,241	879,913	33,833	.....	20,248,064
July	10,298,547	1,379,160	2,735,844	99,389	405,553	56,883	.....	14,975,376
August	5,580,654	638,722	1,938,856	91,803	75,102	120,648	.....	8,445,785
September	2,996,406	328,225	2,223,275	679,676	73,046	.....	.....	6,300,628
October	5,254,396	12,415	1,983,812	683,200	.....	76,298	14,615	8,024,736
November	5,604,222	209,023	1,514,327	980,854	161,823	156,658	5,488	8,632,395
December	1,381,599	140,537	244,468	235,690	70,742	1,389	2,074,425
	61,036,731	8,591,471	14,822,392	3,332,795	2,113,996	495,443	35,961	90,428,789

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SUMMARY OF GRAIN DELIVERIES, ELEVATORS 1, 2, 3, & B—1929

	WHEAT	OATS	BARLEY	CORN	RYE	FLAX	OTHER	TOTAL Bushels
January	84,581	213,341	148,695	41,806	52,800	90,231	971	632,425
February	83,519	270,106	33,380	65,935	44,500	.....	1,325	498,765
March	170,560	192,615	31,953	96,356	15,900	.....	3,018	510,402
April	528,981	216,248	23,771	105,555	14,122	.....	.....	888,677
May	17,267,423	2,480,954	1,066,626	161,406	181,755	51,123	839	21,210,126
June	14,616,296	1,774,159	2,372,047	138,349	871,053	33,833	3,008	19,808,745
July	9,990,035	1,260,452	2,637,633	197,885	299,907	56,883	2,058	14,444,853
August	4,953,097	672,336	1,815,978	223,866	254,295	87,662	1,948	8,009,182
September	3,181,126	395,123	1,995,022	303,253	123,000	.....	1,503	5,999,027
October	5,262,901	364,923	2,029,002	648,440	77,309	76,298	1,413	8,460,286
November	6,601,550	248,097	1,299,314	456,054	125,957	54,789	18,606	8,804,367
December	664,267	150,304	181,894	264,126	64,893	101,869	.....	1,427,353
	63,404,336	8,238,658	13,635,315	2,703,031	2,125,491	552,688	34,689	90,694,208

STATEMENT SHOWING DESTINATION OF EXPORT GRAIN—1929
(Bushels)

COUNTRY	WHEAT	BARLEY	RYE	OATS	BUCKWHEAT	TOTAL
Belgium.....	11,657,654	1,133,171	8,571	885,400	.....	13,684,796
Denmark.....	180,242	.....	213,529	.....	.....	393,771
France.....	4,490,861	.....	.....	442,164	.....	4,933,025
Germany.....	4,081,847	2,833,478	454,285	56,659	.....	7,426,269
Great Britain.....	17,718,111	1,709,694	120,351	1,983,308	.....	21,531,464
Greece.....	2,691,443	.....	.....	.....	.....	2,691,443
Holland.....	5,167,248	6,737,895	411,428	1,290,352	17,370	13,624,293
India.....	252,699	.....	.....	.....	.....	252,699
Irish Free State.....	496,025	163,230	.....	.....	.....	659,255
Ireland, Northern.....	96,000	66,667	.....	89,677	.....	252,344
Italy.....	10,727,331	.....	.....	.....	.....	10,727,331
Norway.....	950,055	.....	470,140	.....	.....	1,420,195
Portugal.....	284,618	.....	.....	.....	.....	284,618
Spain.....	649,772	.....	.....	.....	.....	649,772
Sweden.....	294,620	.....	.....	.....	.....	294,620
Turkey.....	230,000	.....	.....	.....	.....	230,000
Unknown.....	1,926,541	.....	.....	.....	.....	1,926,541
	61,895,067	12,644,135	1,678,304	4,747,560	17,370	80,982,436

SHIPPING

Physically, the season of navigation of 1929 was in all respects average. Navigation opened on April 10th, and continued until December 10th, and during the season the water levels followed the trend of previous years.

The dullness which was a feature of export grain movement during the late Summer and Fall of 1929 was reflected in the number and tonnage of shipping plying to the Port during the season, and resulted in a general decrease all along the line.

Transatlantic vessels numbered 916, with net registered tonnage of 3,910,679 tons, this comparing with 1,222 ships in 1928, having net registered tonnage of 4,693,925 tons. From the Maritime Provinces and Newfoundland there came 367 ships, with net registered tonnage of 727,121 tons, as compared with 385 vessels of 800,137 tons in 1928. Inland vessels numbered 5,085 with net registered tonnage of 13,165,029 tons, as compared with 5,873 ships having net registered tonnage of 13,735,403 tons in the previous year. It is of interest to note that despite these decreases, the total net registered tonnage of all shipping for the year, 17,802,829 tons, was only exceeded in one year previously, and that the record year of 1928.

British ships again maintained an overwhelming proportion of the total arrivals, with 986 ships having tonnage of 3,569,359 tons. Norwegian vessels arrived to the number of 101, while 48 United States ships and 47 Italian ships came to the Port. Holland sent 26 vessels, Denmark 24 and Germany 21. Other nationalities were represented by the following number of ships—Greece, 9; France, 7; Sweden, 4; Japan, 3; Belgium, 2; while Panama, Mexico, Peru, Finland and the Free City of Danzig each sent one.

The following table gives classification of vessels which sailed from the Port in 1929, according to nature of cargo carried:—

	Number	Tonnage
Grain and general.....	395	2,329,405
Grain only.....	158	440,020
General only.....	120	363,485

	Number	Tonnage
Oil tankers, out in ballast.....	89	453,204
Miscellaneous, out in ballast...	88	231,524
Hay.....	6	17,609
General, in transit.....	4	3,048
Scrap iron.....	3	5,173
Cement.....	2	3,846
Grain and Zinc concentrates...	2	6,281
Paper.....	1	3,222
Lumber, in transit.....	1	2,884
Zinc concentrates.....	1	1,481
Machinery, in transit.....	1	793

Passenger business on the St. Lawrence route increases in volume year by year, and the splendid accommodation that has been provided by the Companies engaged in this trade merits such increase. The following statement shows number of passengers carried to and from Montreal in 1928 and 1929 by the various companies specializing in passenger business. It will be noted that these figures do not include third class passengers carried on Westbound voyages, who are disembarked at Quebec.

	1928	1929
Canadian Pacific Steamships... Westbound	13,398	20,880
Eastbound	20,220	27,086
White Star Line..... Westbound	25,090	21,388
Eastbound	14,943	11,791
Cunard and Anchor Donaldson. Westbound	13,112	11,871
Eastbound	17,881	18,229
Canadian National Steamships. Westbound	252	1,054
Eastbound	260	934
	<hr/>	<hr/>
	105,156	113,233

Increase in 1929.....8,077

The considerable increase to be noted in the number of passengers carried in 1929 by the Canadian National Steamships, Limited, was due in large measure to the inauguration of this

Company's new West Indies-Montreal services. Two fine new vessels, the S.S. Lady Somers and the S.S. Lady Rodney, made fortnightly sailings from the Port, carrying passengers and freight. Each vessel brought in large quantities of bananas and other fresh fruits and vegetables on their Westbound trips, and during the season a total quantity of 37,427 tons of bananas was received at the Harbour in this manner.



FREIGHT HOIST DESCENDING FROM UPPER FLOOR OF SHED

HARBOUR OF MONTREAL

Statement showing the Nationalities and Net Tonnage of Sea-Going Vessels that Arrived in the Port of Montreal during the Season of 1929, which were navigated by 96,593 men.

Nationality	Number of Vessels	Net Tonnage
British.....	986	3,569,359
Norwegian.....	101	233,752
American.....	48	208,631
Italian.....	47	160,058
Dutch.....	26	61,677
Danish.....	24	37,464
German.....	21	87,048
Greek.....	9	23,929
French.....	7	11,745
Swedish.....	4	7,109
Japanese.....	3	12,708
Belgian.....	2	6,257
Danzig.....	1	5,095
Panama.....	1	4,067
Mexican.....	1	3,237
Peruvian.....	1	3,164
Finnish.....	1	2,500
	1,283	4,637,800

Of the above, seventeen vessels were built of wood with a net tonnage of 2,004.

HARBOUR OF MONTREAL

Combined Statement Showing the Number and Tonnage of all Vessels that Arrived in the Port of Montreal during the past Ten Years.

Year	TRANS-ATLANTIC		MARITIME PROVINCES AND NEWFOUNDLAND		INLAND		GRAND TOTAL	
	Vessels	Tonnage	Vessels	Tonnage	Vessels	Tonnage	Vessels	Tonnage
1920.....	638	2,020,519	25	11,210	4,403	4,287,714	5,066	6,319,443
1921.....	807	2,598,494	157	293,462	4,577	6,843,494	5,541	9,735,450
1922.....	969	3,453,059	225	479,578	5,789	9,157,062	6,983	13,089,699
1923.....	892	3,221,781	190	461,939	5,609	8,195,308	6,691	11,879,028
1924.....	988	3,597,147	235	499,185	5,791	11,215,764	7,014	15,312,096
1925.....	1,040	4,744,793	215	359,520	5,957	9,678,163	7,212	14,782,476
1926.....	1,042	3,551,489	379	670,241	6,197	12,445,594	7,618	16,667,324
1927.....	1,231	4,252,325	379	740,161	6,188	12,375,564	7,798	17,322,444
1928.....	1,222	4,693,925	385	800,137	5,873	13,735,403	7,480	19,229,465
1929.....	916	3,910,679	367	727,121	5,085	13,165,029	6,368	17,802,829

HARBOUR OF MONTREAL

Statement showing the classification of Trans-Atlantic Vessels that arrived in the Port of Montreal during the past ten years.

Year	Steamships		Ships and Brigs		Schooners		Grand Total	
	No.	Tonnage	No.	Tonnage	No.	Tonnage	No.	Tonnage
1920.....	637	2,018,861	1	1,658	..	....	638	2,020,519
1921.....	807	2,598,494	..	....	..	....	807	2,598,494
1922.....	968	3,451,703	..	....	1	1,356	969	3,453,059
1923.....	892	3,221,781	..	....	..	....	892	3,221,781
1924.....	987	3,597,031	..	....	1	116	988	3,597,147
1925.....	1,040	4,744,793	..	....	..	....	1,040	4,744,793
1926.....	1,042	3,551,489	..	....	..	....	1,042	3,551,489
1927.....	1,231	4,252,325	..	....	..	....	1,231	4,252,325
1928.....	1,222	4,693,925	..	....	..	....	1,222	4,693,925
1929.....	916	3,910,679	..	....	..	....	916	3,910,679

HARBOUR OF MONTREAL

Statement showing the classification of Vessels that arrived in the Port of Montreal during the past ten years from the Lower St. Lawrence and Maritime Provinces and Newfoundland

Year	Steamships		Schooners		Grand Total	
	No.	Tonnage	No.	Tonnage	No.	Tonnage
1920	19	10,724	6	486	25	11,210
1921	151	292,870	6	592	157	293,462
1922	223	479,333	2	245	225	479,578
1923	187	461,645	3	294	190	461,939
1924	231	498,903	4	282	235	499,185
1925	215	359,520	..	..	215	359,520
1926	379	670,241	..	..	379	670,241
1927	379	740,161	..	..	379	740,161
1928	385	800,137	..	..	385	800,137
1929	367	727,121	..	..	367	727,121

HARBOUR OF MONTREAL

Statement showing the dates of the Opening and Closing of Navigation, the First Arrival and the Last Departure for Sea; also the greatest Number of Vessels in the Port at one time, during the past ten years.

Year	Opening of Navigation	Closing of Navigation	First Arrival from Sea	Last Departure for Sea	Greatest number of Vessels in Port at one time			
					Seagoing		Inland	
					No.	Date	No.	Date
1920.....	April 18th	Dec. 11th	April 25th	Dec. 11th	43	Aug. 18th	43	Sept. 14th
1921.....	March 29th	" 14th	" 21st	" 8th	78	Sept. 7th	43	July 16th
1922.....	April 13th	" 6th	" 24th	" 2nd	91	Oct. 24th	55	Aug. 21st
1923.....	" 29th	" 18th	May 3rd	" 1st	63	May 23rd	52	" 4th
1924.....	" 18th	" 12th	April 24th	" 3rd	80	Nov. 4th	43	June 17th
1925.....	" 10th	" 10th	" 16th	" 8th	62	Aug. 19th	46	Oct. 6th
1926.....	May 2nd	" 6th	May 3rd	" 6th	60	May 19th	66	Sept. 7th
1927.....	April 10th	Jan. 4/28	April 12th	" 6th	80	Oct. 20th	44	May 1st
1928.....	" 26th	" 6/29	" 26th	" 9th	61	Nov. 19th	43	Aug. 13th
1929.....	" 10th	Dec. 10th	" 20th	" 7th	53	July 3rd	47	Oct. 7th

MONTREAL HARBOUR BRIDGE

1929 CONSTRUCTION REPORT

The opening of the calendar year found the steelwork quickly approaching St. Catherine Street from the south, and the City Ramp beginning to assume shape. Special efforts were made in the early days of January to complete the demolition required, and on the 22nd of the month, tramway traffic was held up, by arrangement, from 10 to 11 a.m. and from 2.45 to 3.00 p.m., while the truss sections were handled out over this main City artery. Other street traffic was under careful control and was shut off by police authority at necessary moments when connections were being made or other hazardous work undertaken. As soon as possible temporary planking was placed to cover and protect the whole street from falling material and on the 6th February all traffic was again permitted freely. Other streets were similarly treated as they were reached, wires were removed or relocated, pedestrian and vehicular traffic was restricted at critical periods, and by the 19th February the last steel span was able to be dropped into place on the north abutment beyond Nelson Street. The rest of February and all March were devoted to the erection of the smaller parts such as trolley-poles, lamp-posts, fences, curb and aprons, after which the duct-supporting steel was placed with the various inspection ladders and platforms.

Preliminary work on the main span was also recommenced during March, cross beams being erected, derricks being overhauled, curb stringers being added on both anchor arms, and a multitude of other things prepared for the heavy program ahead. On the South side spans, too, the month of March saw activity for the season started, and the duct-carrying steel with such accessories as ladders and platforms was added during the early summer months. The erection of main members was resumed on the 5th April when vertical struts on the south cantilever were lifted into place. From this point onward, the work proceeded rapidly, both sides being built out towards the central span, and the control wedges at the junctions were placed at the end of May and the beginning of June. Heavy



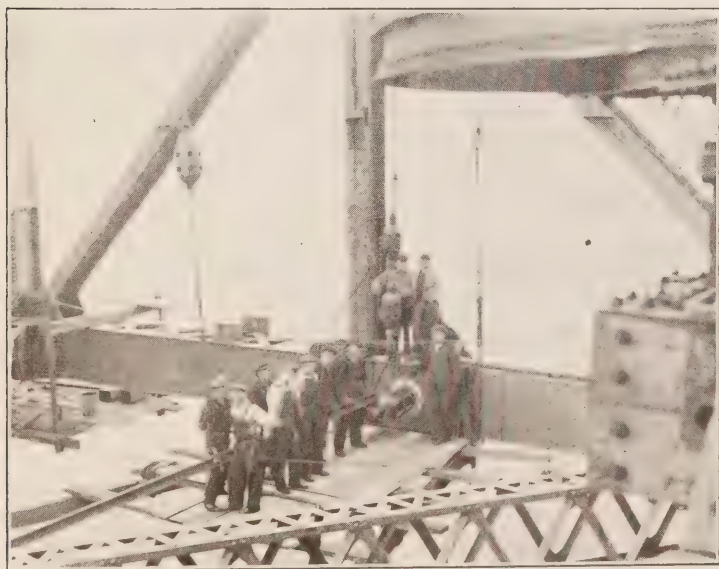
JUST PRIOR TO CLOSURE, ABOUT JULY 1, 1929

travellers had been by this time dismantled, and even the lighter ones were now replaced by still lighter derricks as the erection passed on to the suspended span portions and neared the centre of the channel.

CONNECTION OF MAIN SPAN

Preparations were made with extreme care for the closing operations which were now almost within sight. By means of the control wedges situated in the top and bottom chords at each end and on each side of the suspended span where it was attached to the supporting cantilevers, the two disconnected halves were to be advanced and lowered so that they might finally come precisely into contact and be connected permanently at mid-span. "Der Tag" was set for the 10th July and early on this auspicious morning the picked crews were assembled at their posts of duty, some at the wedges, some at the central point, ready for the word "go." Special systems of control and procedure had been worked out and to some ex-

tent rehearsed, so that all was in perfect order by 5.00 a.m. The weather-man was in kindly mood, and although any and every eventuality had been provided for, the situation remained ideal during the whole operation. The sun was just sufficiently reluctant, the wind was negligible and the temperature hardly varied a degree in the six hours up to 11.00 a.m. Everything went well, and by 8.45 the drift pins were entered into the matching holes and the span was connected. Wedges were then run out as directed and in another two hours the span was "swung," by which is meant that the central span hung freely as a unit from the two cantilevers. The final operations were witnessed by a distinguished gathering, including Senator McDougald, President of the Harbour Board; Dr. Hersey, Commissioner; Mr. Harvie, General Manager; and other officers of the Harbour; several Directors of the Dominion Bridge Company, including Mr. Duggan and Mr. Julian Smith; a large aggregation of the responsible engineers and many representatives of the Press.



DRIVING PIN IN BOTTOM CHORD ON DAY OF CLOSURE

FINAL STEEL ERECTION

During the remainder of the summer, the steelwork was pushed ahead, the erection truss under the South Anchor Arm was dismantled, and painting was commenced. The north approach was completely finished, and so was the Pavilion steel, but only about half the main span was painted before the cold weather prevented further work. The final pound of steel was shipped during December, bringing the total weight to 32,469 tons, or 8.6% over the estimate of October, 1925, which estimate did not include several items actually built into the structure.

FLOORS CONCRETED AND ASPHALTED

Meanwhile the important work of floor-laying had been begun at both ends of the bridge by the two firms responsible. At the south end under Span 1 by Rainville Boulevard the Robertson & Janin Co. installed their plant for mixing concrete for the roadway and sidewalks from the Pavilion down to the south outlet. Formwork was commenced in the first week of June and by the end of September the roadway and sidewalks on the nineteen spans of the south half, the two decks of the Island approach and the top of the Pavilion were poured. Timber curbs were then laid ready for the asphalt wearing surface, which was delayed by agreement until access from the city mixing plants could be had across the bridge itself. On the City side, the Dufresne Construction Company simultaneously set up a mixing plant for concrete at the Nelson Street site, from which point by means of Ford cars they trucked concrete in hoppers to all parts of the north approach as far as Craig Street and Notre Dame Street. The plant was later transferred to Craig St., from whence they served the main span and the few deck spans leading to the Pavilion. Very good progress was made with this work, particularly after the steel contractors had finished and moved away, so that by the end of October the floor-slabs were entirely complete. Asphaltting followed as soon as the concrete was properly set and traffic could be permitted, the Robertson & Janin Co. beginning to lay at the Pavilion end of their stretch on the

9th November and reaching the south outlet on the 4th December. In this period they thus laid both binder and top course on over 5,200 lineal feet of bridge virtually, one mile. The next day they asphalted the upper deck of the Island Ramp, and completed their rolling only an hour or two before similar work was completed at the North Plaza by the other contractors. Asphalting on the City Approach was limited to that portion beyond the retaining walls, as the grade on the upper reaches was considered somewhat high for this type of surface. A considerable area, however, is covered on the north outlet plaza between the walls and Lafontaine Street, and the City undertook the work as sub-contractors from Dufresne. The layout of these outlet plazas was the result of various conferences held during the year between the Harbour, the Advisory Board, the City, the Province and the Engineers. Agreements were reached as to the cooperative contribution of the different interested parties in respect of construction programs, and the Bridge Engineers were able to locate



THE LAST OPERATION ON THE TOP CHORD

all such features as toll-houses, platforms for collectors, police accommodation, temporary sidewalks, fences, and drains. The plazas were thus designed and contracts were let for grading and paving the selected areas, as well as for the construction of buildings, platforms, railings, etc. The work on the south side was carried out by the Robertson & Janin Co. along with their other contracts, and by the beginning of December there was sufficient accomplished to permit the opening of the bridge to traffic. The toll-house itself was let to Jas. G. Thom except for the foundations, and this with all the platforms, railings and walks was completed during the year. The grading was not all done, but temporary measures were taken to make the passage of traffic safe, and several lanes available for immediate use. A scheme was also put into execution whereby the upstream tramway track was brought down on a separate side ramp and passed under the fill at a convenient point, so as to secure suitable storage yard capacity on the downstream side of the embankment without



STEEL FINALLY JOINED, JULY 10TH, 1929

any grade crossings of the vehicular roadway. This subway under the road was constructed during the same season together with all the consequent re-grading. The situation at the north outlet was clarified in August, and drawings were forthwith prepared for extending the roadway-paving, sidewalks, track-spaces, fences, etc., across Burnett Street, leading to the plaza area on the south side of Lafontaine Street. Certain temporary measures were necessary here until such times as the tramways arrangements are completed, but all the work contemplated was let to and finished by the Dufresne Construction Co. except the toll-house which again was awarded to the Jas. G. Thom Company. By early December, all works but the toll-house were ready for operation. This latter had been unavoidably delayed by the occupancy of the ground required, but was finished early in the new year.

Another important feature undertaken during 1929 was the electrical installation for lighting the bridge, providing certain power ducts, and telephonic communication systems. The Commissioners' electrical department prepared the necessary specifications and let the work to the Northern Electric Co., who were well advanced with the early stages of their construction by the end of the year.

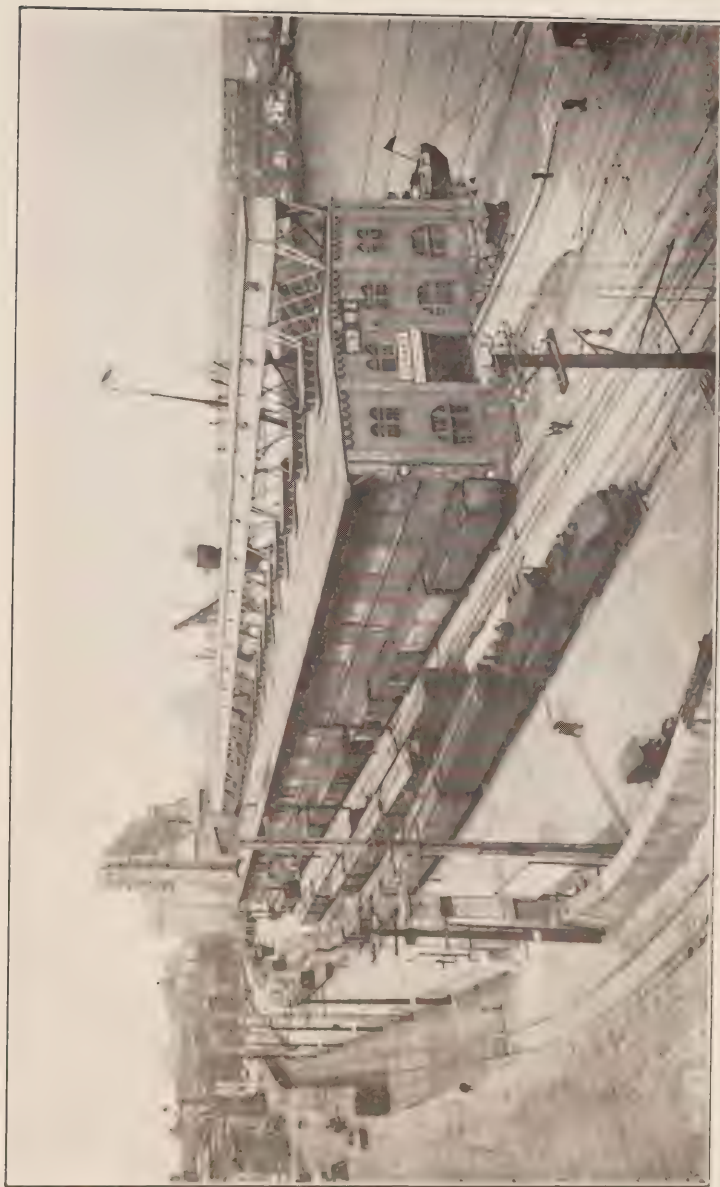
UNDERTAKING VIRTUALLY COMPLETED

Thus the year 1929 virtually saw the completion of the undertaking in so far as providing for pedestrian and vehicular traffic. The Pavilion deck was definitely finished in such a manner as to include tramway rails, but at no other point has the actual trackwork for tramway services been placed. Although the progress with the new Laprairie Boulevard will not permit it being used for several months as the access route to the bridge, the Roads Dept. of the Province have reconditioned Ste. Helene Street and Desaulniers Boulevard, so that a temporary means of entry and exit on the south shore is provided. Ample space is available at the City entrance, and the municipal program will be carried out in plenty of time to meet the need of increasing traffic.

Operating details have been studied during the year, such matters as toll-collection, tariffs, traffic control, and maintenance having been given much consideration. Special permission was conceded to farm traffic towards the closing days of the year, and sleighs were given free access across the bridge for a limited period.

The value of the contract work done during 1929, as measured by the Engineers' certificates, is \$2,151,955.33, of which total just two-thirds represents steelwork and one-third the paving of the plazas, the flooring of the bridge, the tramway tunnel, and all such other items as railings, fences, gradings, drainings and temporary works. The lighting is not yet included.

The Harbour Bridge now presents virtually its final appearance, and is acclaimed on all hands as a worthy and a pleasing structure destined to be of inestimable value to all sections of the community as a connecting link to the Islands and the South Shore, and to the ever-increasing throng of tourists who, in crossing over it, will enjoy an unequalled view of the city, the harbour, the river, the Islands, and Mount Royal crowning all.



SHEDS AND RAILWAY TRACKS IN THE HARBOUR

HARBOUR RAILWAY TERMINALS

From the beginning of the year until the opening of navigation, traffic on the Harbour Commissioners' electrified terminal railroad was relatively greater than for the previous year, the returns showing 2,000 more revenue cars handled during that period. This increase is accounted for by the augmented movement of Westbound interchange traffic between the Canadian National Railways terminals, coupled with an unusually heavy movement of car grain during the month of March. There was also a noticeable increase in the shipments of oil and coal from the Eastern end of these terminals.

The usual winter import traffic from St. John, N.B., was handled this year at Shed No. 8, the repairs to the upstream side of King Edward Pier having necessitated the transferring of this traffic from Shed No. 7.

During the last days of April the first of the season's regular import and export rail traffic was handled. Although the season of 1928 had been one of exceptional activity, the volume of rail traffic in the first three months of this year was so much greater than during the previous year that by the end of July an increase of nearly 11,000 revenue cars had been recorded, all indications being for a season of outstanding results. Unfortunately the slump in the export grain movement from the Port which occurred after the end of June completely altered the situation in this traffic, and made the season unique in the experience of the Railway Department. Reference to this condition has been made elsewhere in this Report, but it is relevant in its effect on the operations of the Railway Traffic Department to point out that the movement of rail-borne grain, which was exceptionally heavy in the early part of the season, fell off to such an extent in the usually busy Fall season, that the total number of grain cars handled at Elevators Nos. 1, 2 and 3 showed a loss of 11,000 cars as compared with 1928. With this exception, the railway traffic during the year was of a very satisfactory volume, the decrease in the inward revenue cars being only 9,309 in face of the loss of 11,000 cars in grain traffic.

This indicates an increase in sources of traffic other than grain, and is accounted for by the betterment in the movement of Westbound interchange traffic from the Canadian National Railways and from industrial plants in the East end using the Harbour tracks as an intermediary only. It is interesting to note that this through local traffic produces 33% of the total revenue cars handled.

In the Fall, there was an exceptionally heavy movement of hay for export, which is worthy of record as having a bearing on the traffic movement at that time.

Outward railway traffic shows, for the entire year, an increase of 3,885 revenue cars, reducing the loss in the aggregate inward and outward traffic to 5,424 cars, or less than 4%, as compared with 1928. The growth in this traffic is attributable, in major part, to the increased coal shipments, and to the inauguration of the Banana traffic from the West Indies, which contributed upwards of 1,200 cars during the season.

There was a slight decrease in rail-borne import and export package freight in 1929 as compared with the previous year, viz.: 42,921 cars in 1929 as against 43,478 cars in 1928.

The transporting of goods within the limits of the Harbour, where the Commissioners are the only carriers, suffered a contraction of about 10% compared with last season, the principal decrease being in the shipments of bagged grain for export and of coal for local delivery.

During the year 140,385 loaded cars and 102,582 empty cars were handled, a total of 242,967 cars.

The electric locomotives gave very satisfactory operation during the year, and for the first time were in operation a greater number of hours than the steam locomotives. The electric locomotives were in service during 16,121 hours, and covered a mileage of 47,506 miles, the figures for 1928 having been 14,235 hours and 40,692 miles.

No additional trackage of any importance was laid or operated on during the year. Construction work affecting the Railway Department was limited to new quarters for the

Yardmaster and trainmen, adjoining the locomotive round-house at Section 42. This new building provides comfortable and sanitary quarters for the men and does away with the unsightly shanties formerly used.

The following table gives the mileage of Harbour railway tracks, and the number of cars handled during the past ten years:—

	Mileage of Harbour Railway	Number of cars handled by Commissioners
1920.....	58.34	174,181
1921.....	58.54	143,564
1922.....	58.77	200,593
1923.....	60.64	216,382
1924.....	63.24	225,377
1925.....	63.55	251,586
1926.....	65.19	205,481
1927.....	67.44	195,853
1928.....	67.99	240,622
1929.....	68.37	242,967

The extent of the Harbour Commissioners' Railway tracks at the end of 1929 is as follows:—

	Lin. ft.	Miles
South of Lachine Canal, Bickerdike Pier, Windmill Point Wharf and West.....	50,264	9.5197
To Guard Pier.....	10,400	1.9697
Sections 12 to 46, High Level, Main Line..	57,079	10.8104
To Piers, Elevators, Crossovers and Sid- ings, etc.....	125,885	23.8418
Sections 35 to 46, Low Level, Main Line...	10,080	1.9091
Sections 46 to 101, High Level, Main Line.	54,134	10.2526
To Wharves, Industries, etc.....	51,146	9.6867
At South Shore, St. Lambert.....	2,300	0.4356
Grand Total Tracks, end of 1929....	361,288	68.4257
Grand Total Tracks, end of 1928....	359,006	67.9935
Increase in 1929.....	2,282	0.4322

COMMODITY TONNAGE STATEMENT

The largest tonnage of imports ever routed to the Port of Montreal, the greatest tonnage of domestic merchandise ever handled at the Harbour, and a reduction in the export tonnage corresponding almost exactly to the decrease in grain exports from the previous year—that, in a word, is the story of the 1929 season of navigation at the Harbour of Montreal. At that, and allowing for a reduction in export tonnage of 3,419,212 tons, the total tonnage of all commodities handled amounted to 9,336,872 tons, which is greater than in any year except 1927 and 1928. This total is made up as follows:—

Imports.....	3,256,991 tons
Exports.....	3,343,772 “
Domestic.....	3,336,109 “

Imports show an increase in tonnage of 713,306 tons over 1928, of which amount, bulk cargoes account for 633,817 tons, as follows:—

	Increase
Petroleum Oil in bulk.....	345,732 tons
Anthracite Coal.....	218,534 “
Sugar.....	40,379 “
Argentine Corn.....	10,050 “
Molasses.....	5,749 “
Sand.....	5,749 “
Sulphur.....	5,654 “
Phosphates.....	1,456 “
Manganese Ore.....	514 “

Imports of bananas, a new trade originating with the Canadian National Steamships West Indies services, amounted to 37,427 tons. Imports of toys increased from 24,139 tons in 1928 to 63,952 tons in 1929.

Exports decreased by 3,494,336 tons from the high figure established in 1928, of which amount 3,346,487 tons is accounted for by the drop in export grain shipments. Exports of automobiles and parts decreased by 125,234 tons, while flour shows a drop of 92,232 tons. Amongst the increases recorded

in exports are the following:—Fruit, 21,339 tons; iron bars, etc., 14,572 tons; printing paper, 13,971 tons; lard, 7,148 tons; liquors, 6,114 tons and rubber manufactures, 6,090 tons.

The commodities listed under “Domestic” increased by 128,776 tons over 1928. Included in this list are many very important items, viz.:—Bituminous coal, 1,543,765 tons; crude oil, 306,827 tons; gasoline, 257,565 tons; grain for local delivery, 219,482 tons; sand, 86,121 tons; gypsum, 79,361 tons; refined sugar, 79,189 tons; hay, 75,124 tons; crushed stone, 73,831 tons; steel, 58,511 tons; anthracite coal, 34,152 tons; cement, 24,873 tons; refined oil, 17,928 tons; vegetables, 17,191 tons; iron and steel bars, 12,770 tons; scrap iron, 11,149 tons.

While exact details of imports and exports are given in the ensuing tables, it is worth noting the extent of the movement of the more important commodities, viz.:—

Principal Imports			Tons
	Tons	Whiting.....	11,443
Petroleum oil.....	1,143,265	Tin plate.....	11,248
Anthracite coal.....	585,122	Fire brick.....	11,022
Raw sugar.....	211,838	Steel billets.....	11,019
Bituminous coal.....	112,385	Crockery.....	10,194
Manganese ore.....	99,817	Miscellaneous oils.....	10,033
Argentine corn.....	77,861	Furniture.....	9,830
Toys.....	63,952	Chinaware.....	9,732
Gasoline.....	42,995	Tea.....	9,579
Dry goods.....	41,066	Paper, manufactures of..	9,426
Sheet glass.....	38,958	Vegetables.....	8,956
Sand.....	37,541	Binder twine.....	8,334
Bananas.....	37,427	Earthenware.....	7,423
Sulphur.....	36,801	Chemicals.....	7,320
Steel sheets.....	32,998	Fish, cured, etc.....	6,977
Steel plates.....	28,565	Garden bulbs.....	6,829
Steel, miscellaneous....	24,189	Marble blocks, etc.....	5,679
Flax seed.....	23,603	Millinery.....	5,566
Wire, various.....	23,281		
Molasses.....	22,686	Principal Exports	
Salt.....	22,068	Wheat.....	1,867,398
Liquors.....	20,313	Barley.....	303,459
Iron and steel bars.....	17,953	Flour.....	251,494
Glassware.....	17,259	Oats.....	89,078
Woodpulp.....	15,865	Fruit.....	79,478
Fruit.....	15,587	Printing paper.....	69,166
Iron pipe, etc.....	14,881	Lard.....	61,420
Steel beams.....	14,194	Meat.....	60,354
Wines.....	14,189	Automobiles and parts..	51,477
Machinery.....	13,612	Rye.....	46,993
Phosphates.....	13,266	Cheese.....	46,132

Principal Exports—Cont'd.

	Tons		Tons
Rubber manufactures...	36,496	Zinc ore	8,332
Cement	30,482	Milk, in tins, etc.	8,260
Woodpulp	27,186	Wire	8,153
Iron bars, etc.	25,599	Ship stores	8,149
Agricultural implements	16,098	Copper	7,994
Liquors	15,660	Cereals	7,831
Rolled Oats	13,342	Pulp and wall board	7,260
Acetic acid	12,638	Sewing machines	6,411
Asbestos	11,406	Aluminum	4,672
Sundries	9,440	Fish	4,262
Paper, miscellaneous . . .	8,521	Magnesite	4,249
		Electric ranges, etc.	4,002



OCEAN LINER IN DRY-DOCK

IMPORTS

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Acetate of Lead.....	30	...	...	30
Acids, various.....	1,184	126	248	810
Advertising Matter.....	162	54	14	94
Aeroplanes and Parts.....	2,340	1,168	...	1,172
Agricultural Implements.....	195	89	102	4
Albumen.....	15	15	...	...
Alum.....	236	6	45	185
Alumino Ferric.....	1,044	6	...	1,038
Aluminum Foil.....	229	72	43	114
" Ingot.....	78	...	76	2
" Scrap.....	39	39	...	...
" Sheets.....	105	52	48	5
" Ware.....	176	16	43	117
Ammonia.....	25	9	8	8
" Carbonate.....	48	...	...	48
" Muriate.....	155	3	82	70
" Nitrate.....	2,265	1,260	...	1,005
Ammunition.....	96	87	...	9
Anchors.....	111	22	1	88
Animal Foods.....	111	92	15	4
Anti-Freeze.....	4	...	4	...
Antimony.....	111	...	...	111
Arrowroot.....	33	...	7	26
Artists' Materials.....	99	54	28	17
Asbestos, Mfrs. of.....	101	13	6	82
Asphalt.....	302	2	79	221
Automobiles and Parts.....	3,266	515	...	2,751
Baby Carriages.....	439	82	82	275
Bags and Bagging.....	4,005	37	2	3,966
Bananas.....	37,427	...	...	37,427
Barley, Pot.....	6	5	...	1
Barrels, etc., Empty.....	2,945	2,621	120	204
Barytes.....	1,144	35	13	1,096
" Carbonate of.....	314	...	303	11
Basic Slag.....	101	...	...	101
Basketware.....	1,415	889	216	310
Bath Brick.....	9	...	2	7
Baths.....	6	3	...	3
Batteries.....	46	45	...	1
Battery Plates.....	947	...	947	...
Beads, Glass.....	104	39	15	50

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Beans, Common.....	1,675	392	77	1,206
Beers.....	1,524	...	964	560
Bees Wax.....	54	...	...	54
Bells.....	73	33	1	39
Belting.....	63	25	3	35
Bicycles and Parts, N.O.S.....	904	834	3	67
Bird Seed.....	60	8	21	31
Biscuits.....	611	235	128	248
Biscuits, Dog.....	381	92	186	103
Black Lead.....	31	...	...	31
Blanc Fixé.....	372	136	...	236
Bleaching Powders.....	1,199	342	46	811
Boats, N.O.S.....	70	61	...	9
Boiler Compound.....	232	9	...	223
Boiler Parts.....	85	43	...	42
Bone Ash.....	14	6	...	8
Bone Black.....	71	33	...	38
Books.....	2,961	791	1,320	850
Boots and Shoes.....	1,706	852	366	488
Bottles, Empty, Common.....	356	42	77	237
“ “ Superior.....	111	6	75	30
“ “ Thermos.....	994	213	547	234
Boxes, Empty.....	114	19	92	3
Boxes, Paper.....	29	5	4	20
Box Toes.....	17	...	...	17
Brass, Mfrs. of.....	428	127	67	234
“ Rods.....	146	5	...	141
“ Scrap.....	21	...	...	21
“ Sheets.....	46	5	...	41
“ Tubing.....	418	195	24	199
Brass Wire.....	85	53	17	15
Brattice Cloth.....	24	24	...	...
Bread.....	8	...	8	...
Brewers Pitch.....	12	...	...	12
Brick, Fire.....	11,022	2,123	...	8,899
“ Glazed.....	163	10	...	153
“ Paving.....	50	...	...	50
Bristles.....	4	4	...	...
Bronze Ingots.....	15	15	...	...
“ Powder.....	65	5	25	35
“ Wire.....	89	57	...	32
“ Mfrs. of.....	58	48	...	10
Brooms and Brushes.....	222	64	45	113

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Buffalo Pickers.....	6	6	...	...
Burlaps.....	844	71	63	710
Butter.....	126	15	...	111
Buttons.....	108	18	3	87
Cable.....	110	27	...	83
Candles.....	198	57	35	106
Canned Goods, N.O.S.....	416	253	88	75
Canvas Hose.....	6	...	...	6
Capsules.....	250	100	27	123
Cardboard.....	409	239	59	111
Carpets.....	3,445	1,711	580	1,154
Casein.....	157	55	...	102
Casings, Sausage.....	21	18	3	...
Castings.....	548	392	...	156
Cedar Logs.....	44	44	...	...
Celluloid.....	65	36	12	17
“ Mfrs. of.....	292	156	32	104
Cellulose Sulphate.....	2,016	...	2,016	...
Cement.....	41	7	3	31
“ Roofing.....	38	8	6	24
Chains.....	594	162	20	412
Chalk.....	518	114	26	378
Chalk, Precipitated.....	129	3	26	100
Charcoal.....	409	...	...	409
Cheese.....	679	256	91	332
Chemicals, N.O.S.....	7,320	2,822	1,638	2,860
Chicory.....	95	11	4	80
Chinaware.....	9,732	3,168	1,378	5,186
Chlorate, Sodium.....	1,948	...	1,948	...
Chloride, Barium.....	23	...	...	23
“ Calcium.....	1,232	...	468	764
“ Magnesium.....	249	13	...	236
Church Ornaments.....	301	57	8	236
Cigars and Cigarettes.....	92	40	9	43
Clay, Burnt.....	230	2	83	145
“ China.....	2,614	183	20	2,411
“ Fire.....	391	51	29	311
“ Pipe.....	2	2	...	...
“ Unmanufactured.....	25	...	...	25
Clocks.....	2,484	997	426	1,061
Clothes Pins.....	326	77	107	142
Coal, Anthracite.....	585,122	...	...	585,122
“ Bituminous.....	112,385	...	...	112,385

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Cocoa.....	424	79	124	221
“ Beans.....	4,147	74	523	3,550
“ Butter.....	1,733	189	933	611
Coconuts.....	2,610	78	514	2,018
Coffee.....	3,212	303	463	2,446
“ Essence.....	26	8	...	18
Coke.....	11	11	...	...
Confectionery.....	2,081	688	913	480
Copperas.....	27	...	...	27
Copper, Mfrs. of.....	56	16	3	37
“ Bars.....	25	25	...	...
“ Rollers.....	27	27	...	...
“ Sheets.....	100	43	3	54
“ Sulphate of.....	385	30	...	355
“ Tubing.....	156	38	42	76
Copper Wire.....	2	2	...	...
Cordage.....	448	9	2	437
Corks.....	80	11	32	37
Corkwood.....	1,484	...	60	1,424
“ Scrap.....	3,397	...	...	3,397
Corn, Argentine.....	77,861	...	...	77,861
Corn Starch.....	16	3	13	...
Cotton Waste.....	456	78	155	223
Cream Separators.....	879	541	239	99
Cream of Tartar.....	181	23	78	80
Creosol.....	42	42	...	...
Crockery.....	10,194	4,468	2,523	3,203
Crucibles.....	244	82	44	118
Curling Stones.....	44	16	28	...
Custard Powder.....	18	11	7	..
Cutch.....	3	3	...	...
Cutlery.....	301	146	39	116
Cyanides.....	712	698	1	13
Cylinders, Gas.....	57	28	1	28
Degras.....	202	78	...	124
Dextrine.....	328	117	66	145
Disinfectants.....	114	5	25	84
Drugs.....	1,298	147	42	1,109
Druggist Sundries.....	280	122	88	70
Dry Colours.....	2,669	613	194	1,862
Dry Goods.....	41,066	6,596	9,283	25,187
Dump Cars.....	98	67	...	31
Dyes.....	701	142	104	455

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Earthen Drain Pipes.....	149	...	...	149
Earthenware.....	7,423	3,053	1,575	2,795
Ebony Logs.....	79	79	...	...
Effects, Settlers.....	2,949	1,858	72	1,019
Eggs.....	42	42	...	...
" Frozen.....	98	...	...	98
Electrical Apparatus.....	2,437	1,438	16	983
Electric Bulbs.....	951	100	...	851
Emery Cloth.....	27	8	8	11
Emery Powder.....	6	6	...	...
Enamels.....	13	...	...	13
Enamelware.....	1,139	282	239	618
Engines, Oil.....	397	229	22	146
Exhibits.....	65	65	...	...
Extracts, N.O.S.....	22	8	...	14
Farina.....	51	23	...	28
Feathers.....	45	28	2	15
Felt.....	495	109	14	372
Ferro Chrome.....	86	28	...	58
" Manganese.....	174	28	...	146
" Silicon.....	61	...	...	61
Fertilizers, N.O.S.....	175	72	11	92
Fibres.....	148	76	24	48
Fibreboard.....	6	...	...	6
Filter Mass.....	46	9	...	37
Fire Arms.....	429	311	50	68
Fish, Cured.....	3,310	2,173	633	504
" Fresh or Frozen.....	44	...	13	31
" In Tins.....	3,623	1,715	939	969
" Meal.....	5	...	...	5
" Plates.....	5	...	...	5
Fishing Apparatus.....	256	192	22	42
Flax Seed.....	23,603	...	2	23,601
Flax Waste.....	11	11	...	...
Flour, Bone.....	110	110	...	...
" Corn.....	13	...	13	...
" Potato.....	1,408	221	...	1,187
" Sago.....	253	103	...	150
" Tapioca.....	53	35	18	...
" Wheat.....	39	25	...	14
" N.O.S.....	196	14	132	50
Fluorspar.....	116	...	...	116
Fly Catchers.....	363	41	34	288

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Forgings.....	46	...	...	46
Fruit, Dried.....	7,507	1,275	2,860	3,372
“ in Brine.....	1,417	58	214	1,145
“ in Tins.....	2,142	142	59	1,941
“ Juices.....	402	17	42	343
“ Pulp.....	264	44	175	45
“ Raw, N.O.S.....	3,855	994	13	2,848
“ Syrups.....	16	...	...	16
Fullers Earth.....	701	245	148	308
Furnace Parts.....	32	31	...	1
Furniture.....	9,830	6,182	1,210	2,438
Furs.....	250	95	7	148
Fur Waste.....	5	2	...	3
Garden Bulbs.....	6,829	3,677	935	2,217
Gasoline.....	42,995	...	...	42,995
Gelatine.....	480	176	27	277
Ginger.....	153	14	3	136
Glass Jars.....	9	3	2	4
“ Powdered.....	6	6	...	...
“ Sheet.....	38,958	16,813	3,923	18,222
“ Ware.....	17,259	4,304	2,624	10,331
Glue.....	1,154	80	457	617
Glycerine.....	3,346	982	547	1,817
Gramophone Records.....	7	4	1	2
Granite Blocks.....	2,416	1,890	71	455
“ Monuments.....	1,679	367	73	1,239
Grass Mats.....	13	13	...	...
Grease.....	243	24	4	215
Grindstones.....	193	24	...	169
Groceries, N.O.S.....	233	80	27	126
Gums.....	413	155	...	258
Gypsum.....	683	9	...	674
Hair.....	47	45	2	...
Hardware, N.O.S.....	2,331	870	412	1,049
Hatters' Fur.....	344	310	...	34
Hemp, Bales.....	184	38	20	126
“ Rope.....	121	90	...	31
Herbs.....	85	14	26	45
Hides.....	671	517	...	154
Hollow Ware.....	633	169	269	195
Honey.....	3	1	...	2
Hops.....	441	52	...	389
Inks.....	102	15	27	60

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Insect Powders.....	43	8	3	32
Instruments, Musical.....	1,110	645	273	192
" " Parts.....	27	27	...	...
" Scientific.....	431	182	27	222
Insulators.....	861	98	24	739
Iron and Steel Bars.....	15,399	2,776	251	12,372
" " Mfrs. of.....	2,534	828	557	1,149
Iron Ore.....	66	17	12	37
" Pig.....	3,604	54	...	3,550
" Pipe.....	4,149	992	2,666	491
" Sand.....	134	26	70	38
" Scrap.....	1,120	...	...	1,120
" Sheet.....	1,613	...	77	1,536
" Skelp.....	4,261	3,285	...	976
Jewellery.....	52	36	4	12
Jute Cloth.....	3,264	415	66	2,783
" Rugs.....	568	480	68	20
Kainit.....	50	...	...	50
Lamp Black.....	45	...	..	45
Lamps and Lanterns.....	183	41	22	120
Lard.....	6	...	6	...
Lawn Mowers.....	7	5	...	2
Lead, Mfrs. of.....	55	11	2	42
" Nitrate of.....	146	...	...	146
" Oxide.....	265	...	109	156
" Pig.....	357	6	...	351
" Pipe.....	23	19	1	3
" Sheet.....	22	18	...	4
Leather, in Bales.....	631	280	108	243
" " Mfrs. of, N.O.S.....	1,354	660	151	543
Leaves, Dried.....	40	27	...	13
Lentils.....	83	15	40	28
Life Buoys.....	26	3	7	16
Lime.....	30	...	...	30
" Chloride of.....	280	28	25	227
" Stone.....	77	...	...	77
Linoleum.....	581	245	199	137
Liquors, Intoxicating.....	20,313	583	12,863	6,867
Litharge.....	451	9	75	367
Lithopone.....	4,771	682	431	3,658
Livestock.....	112	112	...	...
Lobsters, tinned.....	75	9	24	42
Locomotive Parts.....	125	...	...	125

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Macaroni.....	503	...	1	502
Machinery.....	13,612	9,468	711	3,433
Machines, Sewing.....	517	514	...	3
" Washing.....	6	6	...	...
Magnesia.....	210	86	1	123
Magnesite.....	221	...	75	146
Mahogany Logs and Boards....	486	429	3	54
Malt.....	141	...	3	138
" Extract.....	107	32	5	70
Manganese Ore.....	99,817	...	99,817	...
Marble Blocks.....	3,150	69	22	3,059
" Chips.....	1,370	122	37	1,211
" Slabs.....	1,159	205	22	932
Marmalade.....	43	1	11	31
Matches.....	8	...	...	8
Meal, Cod Oil.....	51	...	...	51
Meal, Soya.....	11	...	...	11
Meal, N.O.S.....	309	265	6	38
Meat, Cured.....	38	2	...	36
" Extracts.....	519	...	...	519
" Fresh or Frozen.....	437	...	...	437
" in Tins.....	2,220	110	257	1,853
Meters.....	71	52	...	19
Mica.....	3	3	...	...
Milk, in Tins.....	10	10	...	...
Milk, Powdered.....	19	1	18	...
Millboard.....	26	9	...	17
Millinery.....	5,566	3,323	344	1,899
Mill Stones.....	6	2	...	4
Mill Sweepings.....	19	11	8	...
Mineral Black.....	37	37	...	...
Mineral Waters.....	3,601	685	11	2,905
Molasses.....	22,686	17	54	22,615
Molassine Meal.....	124	59	24	41
Moss.....	80	2	...	78
Motor Boats.....	220	...	...	220
Motorcycles.....	123	104	...	19
Mushrooms.....	303	79	59	165
Mustard.....	290	8	212	70
" Seed.....	151	54	29	68
Nails.....	26	5	...	21
Naphthaline.....	670	12	99	559
Nicotine.....	7	...	...	7

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Nickel Nitrate.....	151	151	...	...
“ Oxide.....	4	4	...	...
“ Sulphate.....	61	32	12	17
“ Sweepings.....	74	74	...	...
Notions.....	1,199	697	225	277
Nuts and Bolts.....	12	9	2	1
Nuts, Edible.....	3,801	416	1,853	1,532
Nutmegs.....	14	...	4	10
Oak Logs.....	237	237	...	...
Oakum.....	8	...	...	8
Oats, Rolled.....	2	...	...	2
Oil, Bean.....	350	10	...	340
“ Carbolic.....	39	...	39	...
“ Castor.....	904	200	75	629
“ Coconut.....	573	94	38	441
“ Cod Liver.....	899	433	111	355
“ Cotton Seed.....	1,211	908	...	303
“ Colza.....	37	...	...	37
“ Essential.....	216	30	5	181
“ Kerosene.....	1,948	...	...	1,948
“ Linseed.....	167	...	...	167
“ Lubricating.....	731	432	126	173
“ Oleo.....	8	...	...	8
“ Olive.....	1,255	142	330	783
“ Palm.....	172	78	...	94
“ Peanut.....	982	909	...	73
“ Petroleum.....	1,143,265	...	...	1,143,265
“ Rape.....	48	28	...	20
“ Seal.....	282	18	...	264
“ Various, N.O.S.....	175	49	10	116
“ Whale.....	36	...	...	36
Oilcake Meal, N.O.S.....	83	...	...	83
Oilmans Stores.....	279	9	129	141
Ovaltine.....	11	...	11	...
Paints.....	727	82	209	436
Paper Bags.....	47	25	13	9
“ Blotting.....	128	10	87	31
“ Mfrs. of, N.O.S.....	4,158	966	528	2,664
“ Printing.....	1,450	850	506	94
“ Roofing.....	9	...	...	9
“ Stock.....	1,104	1,015	...	89
“ Wall.....	549	159	56	334
“ Wrapping.....	1,981	317	766	898

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Paris Green.....	10	...	5	5
Paris White.....	23	23	...	...
Peas.....	2,853	471	...	2,382
Peas, Split.....	194	7	25	162
Peat.....	87	87	...	...
Peat Moss.....	542	289	27	226
Peels.....	171	27	128	16
Pepper.....	386	79	16	291
Perfumery.....	385	136	37	222
Phosphates.....	13,266	...	...	13,266
Photo Sundries.....	373	168	41	164
Piassava.....	25	22	...	3
Pickles.....	375	24	121	220
Pictures and Frames.....	582	223	29	330
Pimento.....	152	4	20	128
Pipe Fittings.....	24	3	...	21
Pipes, Tobacco.....	410	101	3	306
“ “ Clay.....	19	...	...	19
Pitch.....	44	4	...	40
Plasticine.....	18	4	13	1
Plymax.....	24	5	...	19
Plywood.....	157	1	100	56
Polishes.....	341	31	197	113
Poles.....	31	31	...	...
Potash, Caustic.....	260	...	24	236
Potash, Chlorate of.....	354	...	101	253
“ Muriate of.....	2,988	1,799	818	371
“ Nitrate of.....	421	4	205	212
“ Sulphate of.....	623	179	201	243
“ N.O.S.....	453	91	...	362
Poultry.....	10	...	...	10
Preserves, N.O.S.....	789	94	441	254
Printed Matter.....	143	99	19	25
Propellers.....	49	27	...	22
Pulleys and Blocks.....	128	111	7	10
Pulpboard.....	5	2	3	...
Pulpstones.....	31	31	...	...
Pumice Stone.....	163	...	...	163
Putty.....	738	101	59	578
Quarries.....	682	60	274	348
Quartz.....	33	...	...	33
Quicksilver.....	91	85	...	6
Rabbits, Frozen.....	143	44	...	99

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Radio Parts.....	100	7	...	93
Rags.....	4,732	467	368	3,897
Rattans.....	7	4	3	...
Razors and Parts.....	28	24	2	2
Rennet.....	35	15	...	20
Resin.....	63	...	1	62
Rice.....	980	32	28	920
Rice Meal.....	1,377	...	...	1,377
Rivets.....	39	4	...	35
Rope.....	225	58	34	133
Rope Scrap.....	128	128	...	...
Rosewood.....	22	...	...	22
Rubber, Crude.....	67	65	...	2
“ Mfrs. of.....	525	298	60	167
“ Scrap.....	3	3	...	...
“ Substitutes.....	46	37	...	9
Saddlery.....	71	26	2	43
Sal Ammoniac.....	400	...	36	364
Salt Cake.....	2,058	1,305	183	570
“ Coarse.....	21,978	55	81	21,842
“ Fine.....	90	22	54	14
Salts, Bath.....	114	34	62	18
“ Epsom.....	1,175	112	421	642
“ Glauber.....	374	56	...	318
“ Health.....	289	95	181	13
“ Rochelle.....	94	10	1	83
Saltpetre.....	55	...	3	52
Sand.....	37,541	...	..	37,541
Sand, Fire.....	53	...	...	53
Sand Paper.....	30	...	...	30
Sauces.....	787	180	406	201
Sawdust.....	25	...	...	25
Scales.....	18	13	...	5
Scrap Metals, N.O.S.....	70	70	...	...
Screws.....	40	...	...	40
Seed, Aromatic.....	5	...	...	5
“ Caraway.....	86	...	22	64
“ N.O.S.....	49	...	2	47
“ Poppy.....	12	...	8	4
“ Rape.....	98	...	73	25
Seeds, Garden or Field.....	406	167	70	169
Sheep Dip.....	14	5	2	7
Sheep Skins.....	98	34	18	46

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Shellac.....	46	...	13	33
Shooks.....	42	42	...	...
Shortening.....	4	...	4	...
Silica.....	204	2	...	202
Silverware.....	1,164	466	169	529
Sisal.....	66	29	8	29
Slate.....	132	50	...	82
Soap, Castile.....	448	192	112	144
" Common.....	174	116	18	40
" Liquid.....	56	48	...	8
" Powder.....	32	3	...	29
" Toilet.....	209	88	90	31
Soda Ash.....	59	...	...	59
" Bichromate of.....	81	...	...	81
" Caustic.....	391	...	...	391
" Chlorate of.....	1,699	...	...	1,699
" Nitrate of.....	4,543	401	12	4,130
" N.O.S.....	563	55	17	491
" Phosphate of.....	421	215	...	206
" Silicate of.....	90	...	...	90
Soot.....	11	...	11	...
Soups, in Tins.....	33	...	...	33
Speigeleisen.....	28	...	...	28
Spelter.....	112	112	...	...
Spices.....	205	3	3	199
Sponges.....	21	...	...	21
Sporting Goods.....	233	148	21	64
Staples, Metal.....	9	...	...	9
Starch.....	377	17	199	161
" Potato.....	44	...	44	...
Statice.....	57	57	...	...
Stationery.....	926	402	246	278
Statuary.....	872	460	35	377
Stearine.....	76	8	...	68
Steel Angles.....	4,990	129	...	4,861
" Balls.....	660	395	3	262
" Bands.....	759	264	...	495
" Beams.....	14,194	763	...	13,431
" Billets and Blooms.....	11,019	288	...	10,731
" Channels.....	1,736	111	...	1,625
" Dies.....	22	22	...	...
" Hinges.....	11	11	...	...
" Hoops.....	2,636	247	629	1,760

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Steel Joists.....	1,832	...	...	1,832
“ Plates.....	28,565	1,468	311	26,786
“ Poles.....	177	...	...	177
“ Rails.....	251	11	...	240
“ Shanks.....	6	...	...	6
“ Sheets.....	32,998	800	120	32,078
“ Strips.....	724	20	...	704
“ Structural, N.O.S.....	5,564	175	61	5,328
“ Tees.....	116	...	...	116
“ Tubing.....	5,949	2,699	592	2,658
“ Tyres.....	3,476	1,501	...	1,975
Stone Blocks, N.O.S.....	745	10	...	735
“ Mfrs. of.....	14	5	...	9
“ Unmanufactured.....	3,630	3,591	...	39
Stoves.....	63	22	1	40
Strawboard.....	345	91	8	246
Straw Covers.....	346	...	...	346
Sugar of Milk.....	8	...	...	8
Sugar, Raw.....	211,838	224	659	210,955
Sulphate of Alumina.....	239	...	183	56
“ Ammonia.....	709	707	...	2
“ Copper.....	3	...	...	3
“ Zinc.....	122	39	83	...
Sulphur.....	36,801	...	...	36,801
Sundries.....	529	113	206	210
Superphosphate.....	623	...	...	623
Syphons.....	31	10	...	21
Syrups.....	6	...	1	5
Syrup, Corn.....	316	22	226	68
Talc.....	235	23	1	211
Tallow.....	195	193	...	2
Tanners Bate.....	48	...	...	48
Tanners Extract.....	158	28	...	130
Tar.....	329	17	1	311
Tea.....	9,579	989	2,645	5,945
Telephone Apparatus.....	5	5	...	...
Terra Cotta.....	104	15	89	...
Threads.....	656	97	62	497
Tiles.....	4,113	573	611	2,929
Timonax.....	106	...	14	92
Tins, Empty.....	508	76	68	364
Tin Foil.....	3	3	...	...
“ Ingots.....	462	69	43	350

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Tin, Oxide of.....	42	42	...	...
“ Plate.....	11,248	1,819	21	9,408
“ Ware.....	348	278	13	57
Tobacco Leaf.....	125	12	2	111
“ Mfrs. of.....	225	60	11	154
Tobacco Sundries.....	239	29	16	194
Toilet Articles.....	540	40	221	279
Tomato Paste.....	242	...	...	242
Tools.....	579	161	88	330
Toys.....	63,952	46,310	6,883	10,759
Tractors and Parts.....	256	119	...	137
Trucks.....	63	16	...	47
Trunks.....	4	4	...	...
Turpentine.....	4	...	...	4
Twine, Binder.....	8,334	28	7,071	1,235
“ Cotton.....	325	44	17	264
“ Hemp.....	11	...	...	11
“ Jute.....	17	17	...	...
Typewriters.....	28	19	...	9
Umbrellas.....	6	4	2	...
Valises.....	15	...	...	15
Valves.....	166	104	4	58
Varnishes.....	113	7	20	86
Vegetables, in tins.....	2,157	86	186	1,885
“ Raw.....	6,799	1,627	...	5,172
Veneers.....	28	2	...	26
Vinegar, in Barrels.....	33	3	25	5
“ in Glass.....	53	...	28	25
Vitriol.....	63	...	...	63
Walnut Logs.....	709	709	...	...
Watches.....	30	3	...	27
Wax.....	754	8	5	741
Wheels.....	195	86	1	108
Whiting.....	11,443	5,101	724	5,618
Willows.....	21	21	...	...
Window Frames.....	1,494	1,055	242	197
“ Shades.....	7	...	...	7
“ Rollers.....	111	106	...	5
Wines.....	14,189	629	2,300	11,260
Wire, Barbed.....	23	...	...	23
“ Cloth.....	110	...	...	110
“ Coils.....	1,868	631	1,237	...
“ in Barrels.....	269	15	29	225

Distribution after Import

COMMODITY	Total Tons	Rail	Vessel	Other
Wire, Mfrs of.....	105	35	13	57
“ Netting.....	1,907	559	120	1,228
“ Rods.....	18,440	1,360	1,118	15,962
“ Rope.....	559	197	45	317
Woodenware.....	812	415	151	246
Woodpulp.....	15,865	219	...	15,646
Wood Wool.....	3	3	...	...
Wool.....	1,308	1,207	76	25
“ Grease.....	62	7	17	38
“ Greasy.....	263	196	...	67
“ Scoured.....	257	250	7	...
“ Tops and Noils.....	1,498	1,401	96	1
“ Waste.....	416	241	12	163
Yarns.....	1,281	825	117	339
Zinc Dross.....	7	...	...	7
“ Plates.....	1,793	2	...	1,791
“ Sheets.....	642	52	10	580
“ White.....	141	...	...	141
Grand Total.....	3,256,991	223,000	209,119	2,824,872

EXPORTS

Carried Before Export

COMMODITY	Total Tons	Rail	Vessel	Other
Acetic Acid.....	12,638	12,638	...	...
Acetone.....	10	...	...	10
Advertising Matter.....	63	36	15	12
Aeroplanes and Parts.....	92	8	...	84
Agricultural Implements.....	16,098	12,083	3,990	25
Alcohol, Industrial.....	132	36	...	96
Aluminum Ingots.....	3,631	3,270	361	...
“ Rods.....	52	52	...	...
“ Scrap.....	636	201	389	46
“ Sheets.....	265	37	228	...
“ Ware.....	49	13	30	6
“ Wire.....	39	39	...	...
Ammonia.....	115	...	115	...
“ Sulphate of.....	2,371	2,244	120	7
Ammunition.....	51	47	...	4

COMMODITY	Carried Before Export			
	Total Tons	Rail	Vessel	Other
Animal Foods, N.O.S.....	2,418	1,595	248	575
Animals, Small.....	121	121	...	...
Asbestos Cement.....	62	62	...	...
“ Crude.....	2,224	2,215	...	9
“ Fibre.....	8,959	8,955	...	4
“ Mfrs. of.....	119	68	...	51
“ Shingles.....	42	5	...	37
Asphalt.....	226	...	...	226
“ Shingles.....	640	197	...	443
Automobiles and Parts.....	51,477	48,205	8	3,264
Automobile Springs.....	101	101	...	...
Axles.....	19	19	...	...
Babbit.....	27	8	19	...
Baby Carriages.....	12	12	...	...
Bags and Bagging, Jute.....	993	44	13	936
Bags, Paper.....	184	84	47	53
Baking Powder.....	48	...	...	48
Balsam.....	2	...	...	2
Barley Meal.....	101	101	...	...
Barrels and Drums, Empty.....	2,098	556	419	1,123
Basketware.....	7	3	...	4
Batteries.....	715	239	362	114
Beans.....	40	...	6	34
Bedding.....	1,194	405	12	777
Beers.....	205	85	...	120
Belting.....	25	23	1	1
Bicycles and Parts.....	319	299	19	1
Bird Seed.....	19	...	13	6
Biscuits.....	20	20	...	...
“ Dog.....	15	15	...	...
Blocks, Maple.....	544	464	...	80
Boats.....	86	86	...	...
Boiler Compound.....	18	...	18	...
“ Parts.....	147	27	...	120
Bone Black.....	57	57	...	...
Books.....	95	46	18	31
Boots and Shoes.....	89	39	1	49
Bottles, Empty.....	535	2	7	526
“ Thermos.....	15	3	...	12
Box Board.....	1,415	1,415	...	...
Boxes, Empty.....	91	14	...	77
“ Paper.....	55	12	...	43
Brake Shoes.....	18	18	...	...

Carried Before Export

COMMODITY	Total Tons	Rail	Vessel	Other
Bran.....	730	177	...	553
Brass, Mfrs. of.....	35	...	18	17
" Rods.....	29	19	10	...
" Scrap.....	149	...	49	100
Brick, Fire.....	78	68	...	10
Bronze Ingots.....	6	6	...	...
Bronze Powder.....	170	3	25	142
Brooms and Brushes.....	152	48	94	10
Butter.....	159	13	...	146
Butter Milk.....	805	95	...	710
Buttons.....	6	6	...	...
Calks, Toe.....	15	...	2	13
Canned Goods, N.O.S.....	607	139	171	297
Capsules.....	164	33	51	80
Captax.....	78	78	...	...
Carbide.....	1,403	1,400	...	3
Carborundum Sand.....	1,035	1,035	...	...
Cardboard.....	30	27	3	...
Carpets.....	71	57	...	14
Casings, Sausage.....	1,257	751	159	347
Castings.....	139	57	56	26
Catsup.....	629	462	98	69
Celluloid, Mfrs. of.....	7	6	...	1
Cement, Building.....	30,482	296	...	30,186
" Roofing.....	5	5	...	...
Cereals.....	7,831	7,814	...	17
Chains.....	406	349	38	19
Cheese.....	46,132	4,309	97	41,729
Chemicals, N.O.S.....	75	40	17	18
Chicory.....	5	...	...	5
Chinaware.....	42	34	...	8
Church Ornaments.....	6	2	...	4
Cigars and Cigarettes.....	48	1	...	47
Clay, Fire.....	13	...	...	13
Clocks.....	56	52	...	4
Clothes Pins.....	577	...	...	577
Cobalt Ore.....	2,034	2,034	...	...
" Oxide.....	15	15	...	...
" Residue.....	12	12	...	...
" Silicin.....	30	30	...	...
" Slabs.....	1,252	1,252	...	...
Cocoa.....	100	...	...	100
Coffee.....	64	5	...	59

COMMODITY	Total Tons	Carried Before Export		
		Rail	Vessel	Other
Coffins.....	6	1	...	5
Coke.....	25	...	...	25
Confectionery, N.O.S.....	540	110	338	92
Copper Billets.....	1,572	...	1,572	...
“ Mfrs. of.....	13	13	...	...
“ Matte.....	2,711	2,711	...	...
“ Ore.....	25	25	...	...
“ Scrap.....	57	...	...	57
“ Sheets.....	38	8	30	...
“ Slabs.....	3,474	3,474	...	...
“ Wire.....	104	26	...	78
Cordage.....	10	10	...	...
Corn, Cracked.....	96	...	...	96
Corn Meal.....	331	...	...	331
Corn Starch.....	247	220	27	...
Cotton Waste.....	5	...	...	5
Cream Separators.....	72	46	7	19
Crockery.....	8	...	...	8
Crucibles.....	5	...	...	5
Cutlery.....	11	7	...	4
Cyanide.....	761	761	...	...
Cylinders, Empty.....	3	...	...	3
Dextrine.....	2	2	...	...
Disinfectants.....	54	...	...	54
Dolomite.....	59	59	...	...
Doors.....	49	43	...	6
Dowels.....	410	373	...	37
Drugs and Medicines.....	988	152	330	506
Druggists' Sundries.....	1,395	1,289	1	105
Dry Colours.....	28	...	...	28
Dry Goods.....	2,212	780	358	1,074
Dyes.....	91	31	37	23
Earthenware.....	138	81	51	6
Effects, Settlers.....	1,405	688	8	709
Eggs.....	1,198	1,091	...	107
Egg Fillers.....	105	105	...	...
Electrical Apparatus.....	1,783	370	1,338	75
Electric Ranges and Parts.....	2,219	1,825	6	388
Enamelware.....	17	9	8	...
Engines, Oil.....	142	135	...	7
Exhibits.....	34	34	...	...
Extracts.....	66	12	25	29
Feldspar.....	89	89	...	...

COMMODITY	Carried Before Export			
	Total Tons	Rail	Vessel	Other
Felt.....	273	265	...	8
Fibreboard.....	889	879	...	10
Fire Arms.....	13	10	...	3
Fire Extinguishers.....	9	...	9	...
Fish, Cured.....	1,467	39	...	1,428
" Fresh or Frozen.....	1,987	906	...	1,081
" in Tins.....	808	801	...	7
" Meal.....	275	275	...	...
Fishing Apparatus.....	7	7	...	...
Flax Screenings.....	1,120	812	308	...
Flax Tow.....	6	6	...	...
Flooring, Hardwood.....	1,554	1,472	...	82
Flour.....	251,494	140,294	...	111,200
Flour, Corn.....	394	394	...	...
Fruit, Dried.....	197	80	45	72
" in Tins.....	594	168	346	80
" Jars.....	486	465	...	21
" Juices.....	123	99	...	24
" Pectin.....	1,502	1,502	...	...
" Pulp.....	106	48	...	58
" Raw.....	76,928	76,520	20	388
" Salts.....	85	...	85	...
" Syrups.....	28	4	6	18
Furnace Parts.....	12	12	...	...
Furniture.....	2,274	2,087	9	178
Furs.....	332	51	...	281
Fur Waste.....	9	...	...	9
Garden Bulbs.....	469	464	...	5
Gasoline.....	350	...	...	350
Gelatine.....	8	...	...	8
Glassware.....	133	39	5	89
Glucose.....	649	488	161	...
Glue.....	32	11	19	2
Grain in Bags:—				
Corn.....	437	5	...	432
Oats.....	9,640	2,772	...	6,868
Wheat.....	10,546	202	...	10,344
Grain in Bulk:—				
Barley.....	303,459	...	303,459	...
Buckwheat.....	417	...	417	...
Oats.....	79,438	...	79,438	...
Rye.....	46,993	...	46,993	...
Wheat.....	1,856,852	...	1,856,852	...

COMMODITY	Total Tons	Carried Before Export		
		Rail	Vessel	Other
Granite.....	25	25	...	...
Graphite.....	143	143	...	...
Grease.....	350	254	59	37
Grindstones.....	8	...	...	8
Groceries, N.O.S.....	119	67	35	17
Gums, Chewing.....	144	144	...	...
Gypsum Plaster.....	3,285	3,242	...	43
Hair.....	733	718	2	13
Hay.....	75,124	47,831	19,565	7,728
Handles, Wooden.....	1,214	1,184	4	26
Hardware.....	614	421	49	144
Hemp, in Bales.....	202	...	202	...
Hides.....	29	16	...	13
Hollow Ware.....	86	69	1	16
Honey.....	916	572	180	164
Hops.....	819	786	...	33
Horse Meat.....	31	...	...	31
Horse Shoes.....	132	...	...	132
Incubators.....	18	18	...	...
Inks.....	200	...	172	28
Insect Powders.....	7	...	3	4
Instruments, Musical.....	866	669	11	186
" " Parts.....	223	219	...	4
" Scientific.....	14	12	...	2
Insulators.....	463	456	...	7
Iron Bars.....	856	135	13	708
Iron, Mfrs. of.....	422	303	61	58
" Piping.....	10,423	4,274	11	6,138
" Scrap.....	13,898	83	...	13,815
Jewellery.....	5	3	...	2
Kalsomine.....	352	281	71	...
Lamps and Lanterns.....	99	36	61	2
Lard.....	61,420	61,356	...	64
Last Blocks.....	10	...	...	10
Lawn Mowers.....	76	21	...	55
Lead Dross.....	145	...	145	...
" Mfrs. of.....	9	...	...	9
" Pig.....	15	15	...	...
Leather Board.....	108	13	...	95
" in Bundles.....	184	79	...	105
" Mfrs. of.....	440	321	92	27
" Scrap.....	21	...	...	21
Lime.....	56	56	...	...

COMMODITY	Carried Before Export			
	Total Tons	Rail	Vessel	Other
Linoleum.....	355	...	...	355
Liquors.....	15,660	14,417	846	397
Litharge.....	178	...	...	178
Livestock.....	97	97	...	...
Lobsters, in Tins.....	780	643	2	135
Locomotives and Parts.....	415	373	...	42
Lumber.....	60	...	...	60
“ Planed.....	648	648	...	...
Lye.....	30	...	30	...
Macaroni.....	550	97	...	453
Machinery.....	2,457	1,941	103	413
Machines, Sewing and Parts....	6,411	6,394	...	17
Magnesia, Milk of.....	1,157	56	1,101	...
Magnesite.....	591	591	...	...
Magnesite, Dead Burned.....	3,658	3,658	...	...
Malt.....	170	110	...	60
Maple Strips.....	1,078	987	...	91
Match Splints.....	2,634	2,634	...	...
Meals, N.O.S.	149	129	...	20
Meat, Cured.....	55,854	55,421	179	254
“ Extracts.....	62	...	...	62
“ Fresh or Frozen.....	1,009	957	...	52
“ in Tins.....	3,429	3,023	4	402
Meters.....	132	68	61	3
Mica.....	4	4	...	...
Middlings.....	443	338	...	105
Milk, in Tins.....	6,559	6,410	44	105
“ Powdered.....	1,701	1,401	...	300
Millinery.....	41	21	...	20
Mineral Waters.....	338	4	...	334
Molybdenite.....	3	3	...	...
Motor Boats.....	83	61	...	22
Motorcycles.....	6	...	...	6
Mustard.....	22	16	...	6
Nails.....	2,853	491	161	2,201
Naphthaline.....	74	...	...	74
Nickel Ingots.....	160	160	...	...
“ Matte.....	3,044	3,044	...	...
“ Oxide.....	251	251	...	...
“ Scrap.....	9	...	...	9
“ Slabs.....	30	30	...	...
Nuts and Bolts.....	725	96	24	605
Nuts, Edible.....	13	...	5	8

COMMODITY	Total Tons	Carried Before Export		
		Rail	Vessel	Other
Oat Feed.....	3,922	1,737	2,159	26
Oatmeal.....	791	791	...	...
Oats, Rolled.....	13,342	13,302	...	40
Oil Cake.....	3,906	680	...	3,226
“ Cod Liver.....	6	...	5	1
“ Colza.....	3	...	...	3
“ Corn.....	73	73	...	...
“ Essential.....	14	1	...	13
“ Fuel.....	46	18	...	28
“ Lard.....	9	9	...	...
“ Linseed.....	25	...	...	25
“ Lubricating.....	353	205	...	148
“ Oleo.....	1,585	1,512	73	...
“ Various, N.O.S.....	25	17	4	4
Oilman's Stores.....	50	4	33	13
Ores, various.....	84	84	...	...
Oxides.....	14	14	...	...
Oxygen.....	4	...	...	4
Paints.....	1,000	60	82	858
Paperboard.....	422	330	...	92
Paper, Bottle Wrappers.....	75	...	...	75
“ Mfrs. of.....	599	323	59	217
“ Printing.....	69,166	68,946	24	196
“ Roofing.....	1,489	760	...	729
“ Wall.....	932	367	296	269
“ Wrapping.....	5,426	5,228	11	187
Peanuts.....	31	11	20	...
Peas.....	267	256	...	11
“ Split.....	31	31	...	...
Phosphorus.....	2,468	314	2,154	...
Photo Supplies.....	762	751	5	6
Pickles.....	53	53	...	...
Pictures and Frames.....	41	21	1	19
Pimento.....	18	...	...	18
Pipe and Fittings.....	255	153	15	87
Pitch.....	28	28	...	...
Plasterboard.....	2,573	2,460	...	113
Pollard.....	9	...	...	9
Polishes.....	118	8	12	98
Potash.....	17	...	...	17
Poultry.....	55	...	...	55
Preserves.....	11	3	6	2
Printed Matter.....	135	59	13	63

COMMODITY	Carried Before Export			
	Total Tons	Rail	Vessel	Other
Propellers.....	13	13	...	...
Pulleys.....	18	18	...	...
Pulpboard.....	3,555	3,495	4	56
Putty.....	8	...	...	8
Radiators.....	194	15	138	41
Radio Parts.....	70	67	...	3
Rags.....	1,296	77	473	746
Razor Parts.....	18	2	1	15
Refrigerators.....	1,456	1,170	73	213
Releaseall.....	31	...	...	31
Rennet.....	6	...	...	6
Resin.....	15	15	...	...
Rice.....	154	...	...	154
Rice Meal.....	560	...	...	560
Rivets.....	92	24	8	60
Roofing Felt.....	48	48	...	...
Roofing, Metallic.....	9	...	...	9
Rope.....	16	8	1	7
Rubber Cement.....	13	...	10	3
“ Mfrs. of.....	36,496	23,285	8,980	4,231
“ Scrap.....	72	...	...	72
Saddlery.....	4	...	...	4
Safes.....	22	22	...	...
Salt, Coarse.....	96	1	...	95
“ Fine.....	1,457	1,449	...	8
Sand.....	93	21	...	72
Sandpaper.....	27	27	...	...
Sausages.....	19	19	...	...
Sawdust.....	6	...	...	6
Scales.....	68	66	...	2
Screenings.....	933	933	...	...
Screws.....	17	6	10	1
Seeds.....	1,407	809	595	3
Seneca Root.....	98	98	...	...
Shawinigan Black.....	1,364	1,364	...	...
Shellac.....	7	...	1	6
Sheep Skins.....	26	3	23	...
Shingles, N.O.S.....	273	49	...	224
Ship Stores.....	8,149	...	...	8,149
Shoe Counters.....	136	6	...	130
Shoe Shanks.....	113	108	...	5
Shooks.....	1,056	1,043	...	13
Shortening.....	71	2	67	2

COMMODITY	Carried Before Export			
	Total Tons	Rail	Vessel	Other
Shorts.....	447	140	...	307
Siliconware.....	48	48	...	...
Silver Bars.....	114	...	...	114
Silver Ore.....	24	19	...	5
Silverware.....	13	9	...	4
Skewers.....	20	20	...	...
Soap, Liquid.....	18	2	...	16
“ Powders.....	563	268	64	231
“ Toilet.....	127	47	76	4
Soapstone.....	489	479	...	10
Soda, Caustic.....	21	...	21	...
“ N.O.S.....	42	21	...	21
“ Pulp.....	147	...	...	147
Soups, in tins.....	523	366	27	130
Spices.....	43	...	1	42
Spikes.....	419	2	181	236
Sporting Goods.....	272	223	27	22
Staples, Metal.....	408	255	...	153
Starch.....	433	322	110	1
Stationery.....	161	41	41	79
Statuary.....	6	1	...	5
Stellite.....	22	22	...	...
Steel Angles.....	6	...	...	6
“ Beams.....	15	...	...	15
“ Hoops.....	44	44	...	...
“ Plates.....	30	8	...	22
“ Rails.....	70	...	...	70
“ Rods.....	8	...	...	8
“ Sheets.....	242	152	...	90
“ Structural.....	34	...	...	34
Stone Blocks.....	171	171	...	...
“ Mfrs. of.....	14	4	...	10
Stoves.....	410	311	...	99
Sugar, Maple.....	24	11	...	13
Sugar of Milk.....	17	17	...	...
“ Refined.....	2,023	...	...	2,023
Sundries.....	9,440	1,594	5,490	2,356
Sweeping Powder.....	88	42	18	28
Syrup, Corn.....	449	425	24	...
“ Maple.....	31	5	6	20
Talc.....	441	441	...	...
Tallow.....	15	15	...	...
Tanners Extract.....	66	63	...	3

COMMODITY	Carried Before Export			
	Total Tons	Rail	Vessel	Other
Tar.....	17	...	...	17
Tea.....	103	5	2	96
Telephone Poles.....	148	148	...	...
Thread.....	11	3	...	8
Tiles.....	63	14	49	...
Tin Ashes.....	7	...	...	7
Tins, Empty.....	167	6	18	143
Tinware.....	15	1	1	13
Tobacco, Raw Leaf.....	552	527	...	25
" Mfrs. of.....	4	2	...	2
Tobacconists' Sundries.....	53	53	...	...
Toilet Preparations.....	230	8	188	34
Tools.....	680	617	6	57
Toys.....	196	120	76	...
Tractors.....	1,068	1,068	...	...
Traction Engines.....	611	611	...	...
Trucks.....	496	388	...	108
Trunks.....	51	2	1	48
Twine, Binder.....	221	170	51	...
" Cotton.....	34	34	...	...
Typewriters.....	19	15	...	4
Valves.....	783	62	287	434
Varnishes.....	125	6	2	117
Vegetables, in Tins.....	3,583	976	1,185	1,422
" Raw or Green.....	40	...	...	40
Veneers.....	21	21	...	...
Vinegar in bbls.....	103	1	58	44
Wagons.....	26	18	...	8
Wallboard.....	3,705	3,665	...	40
Washers, Metal.....	53	31	...	22
Washing Compounds.....	200	...	109	91
" Machines.....	218	177	19	22
Watches.....	6	6	...	...
Wax.....	8	8	...	...
Wheels and Parts.....	275	239	...	36
Window Shades.....	183	169	4	10
Windmills.....	45	45	...	...
Wines.....	4	3	...	1
Wire in Barrels.....	777	44	58	675
" Barbed.....	1,589	1,455	...	134
" Cable.....	146	72	4	70
" Cloth.....	124	20	94	10
" Fencing.....	951	648	209	94

COMMODITY	Carried Before Export			
	Total Tons	Rail	Vessel	Other
Wire, Mfrs. of.....	89	18	29	42
“ Netting.....	59	50	5	4
“ Rods.....	10	...	10	...
“ Rope.....	20	7	...	13
“ Steel, in coils.....	4,388	2,427	...	1,961
Woodenware.....	285	236	27	22
Woodpulp.....	27,186	27,186	...	...
Wood Shanks.....	34	34	...	...
“ Wool.....	10	...	...	10
Wool.....	504	504	...	...
“ Waste.....	6	...	2	4
Yeast.....	50	3	46	1
Zinc Dross.....	171	...	...	171
“ Ingots.....	45	...	...	45
“ Ore.....	8,332	8,332	...	...
“ Plates.....	5	5	...	...
“ Sheets.....	3	1	...	2
“ Skimmings.....	161	...	...	161
Totals.....	3,418,896	779,928	2,346,936	292,032

DOMESTIC

	Total Tons	RAIL		VESSEL		Other
		In	Out	In	Out	
Acids.....	580	580	...	...	...	...
Aeroplanes and Parts	87	36	51	...	...	...
Alcohol, Industrial...	840	...	839	...	1	...
Ammonia.....	11	...	...	11	...	...
Ammunition.....	30	...	19	11	...	...
Asbestos.....	30	30	...	...	...	...
Asphalt.....	47	...	47	...	...	...
Automobiles and Parts.....	26	15	8	3	...	...
Bagging.....	529	133	376	17	3	...
Baking Powder.....	69	66	...	...	3	...
Barrels, Empty.....	84	69	15	...	.	...
Basketware.....	258	258	...	...	...	...
Baths.....	79	79	...	...	...	...
Beans.....	226	211	...	...	15	...
Beers.....	75	19	...	42	14	...

	Total	RAIL		VESSEL		
	Tons	In	Out	In	Out	Other
Bicarbonate of Soda..	96	...	96	...	...	...
Bicycles and Parts...	144	144	...	...	...	...
Binder Tine.....	13	13	...	...	...	...
Boats.....	23	23	...	...	...	...
Boilers and Parts....	1,018	250	765	...	3	...
Bolts and Nuts.....	9	...	...	...	9	...
Books.....	3	...	...	3	...	...
Bottles, Empty.....	2	...	...	...	2	...
Boxes, Empty.....	99	73	26	...	...	...
Bran.....	15	...	...	...	15	...
Brassware.....	6	...	...	6	...	...
Brick, Fire.....	357	303	54	...	...	...
“ Terra Cotta...	425	425	...	...	...	...
Brooms.....	150	150	...	...	...	...
Butter.....	158	105	52	...	1	...
Camphor.....	10	...	...	10	...	...
Canned Goods, N.O.S	122	...	...	122	...	...
Carbide.....	63	63	...	...	...	...
Cash Registers.....	7	...	...	7	...	...
Castings.....	205	205	...	...	...	...
Cement.....	24,873	70	12,247	350	10,708	1,498
Cereals.....	58	58	...	...	...	...
Charcoal.....	481	50	431	...	...	...
Cheese.....	2,893	...	2,893	...	...	...
Chinaware.....	132	...	...	124	8	...
Chloride, Calcium...	26	26	...	...	...	...
Cinders.....	177	177	...	...	...	...
Clay.....	76	76	...	...	...	...
Clay, Fire.....	30	30	...	...	...	...
Cleansers.....	237	229	...	...	8	...
Coal, Anthracite....	34,152	34,152	...	...	...	...
Coal, Bituminous....	1,543,765	19,298	...	1,524,088	...	379
Coffee.....	34	33	...	...	1	...
Coke.....	720	720	...	...	...	...
Confectionery.....	33	32	...	1	...	...
Cotton, Waste.....	236	184	52	...	...	...
Cream Separators...	175	175	...	...	...	...
Crockery.....	603	42	...	459	102	...
Curios.....	5	...	...	5	...	...
Doors.....	115	115	...	...	...	...
Drugs.....	36	5	...	8	23	...
Drums, Steel.....	163	121	29	12	1	...
Dry Goods.....	37	18	4	15	...	...
Earthen Pipe.....	24	24	...	...	...	...

	Total	RAIL		VESSEL		Other
	Tons	In	Out	In	Out	
Earthenware.....	6	...	...	6	...	...
Eggs.....	1,369	1,367	2	...	...	...
Eggs, in tins.....	66	51	...	15	...	...
Enamelware.....	471	458	13	...	...	...
Feathers.....	31	...	...	31	...	...
Feeds.....	60	...	...	...	60	...
Felt.....	122	14	...	...	108	...
Fertilizers.....	20	...	20	...	...	...
Fish, Cured.....	94	12	...	79	3	...
Fish, in tins.....	3,764	174	...	3,570	20	...
Flax.....	6,627	6,627	...	...	...	...
Flax Seed.....	4,047	4,047	...	...	...	...
Flour.....	3,335	217	80	2,431	607	...
Fruit, Dried.....	3	...	...	...	3	...
“ Green.....	3,680	2,857	686	...	137	...
“ In tins.....	3,043	...	...	3,041	2	...
“ Juices.....	42	23	...	...	19	...
“ Syrup.....	129	...	...	...	129	...
Furniture.....	205	31	130	30	36	8
Galvanized Sheets...	7,950	1,245	6,664	...	35	6
Gasoline.....	257,565	...	44,623	54,702	158,240	...
Gear.....	515	232	283	...	...	...
Gelatine.....	19	...	19	...	...	...
Glass, Sheet.....	51	...	51	...	...	...
Glassware.....	115	41	...	1	73	...
Glucose.....	164	164	...	...	...	...
Grain, for Local Deliv- very.....	219,482	...	...	219,482	...	...
Grain, in Bags.....	602	251	81	...	270	...
Groceries.....	573	534	13	9	17	...
Gypsum.....	79,361	...	...	79,361	...	...
Handles, Wooden....	101	97	...	4	...	...
Hardware.....	83	26	11	24	22	...
Hides.....	65	...	...	...	65	...
Hollow Ware.....	16	12	...	4	...	...
Hops.....	9	...	...	7	2	...
Horses.....	15	15	...	...	...	...
Iron and Steel Bars..	12,770	1,979	10,490	2	20	279
“ Pig.....	62	...	62	...	...	...
“ Pipe.....	909	714	127	26	35	7
“ Sheet.....	52	...	52	...	...	...
Lard.....	2,681	2,680	...	1	...	...
Laths.....	4	...	...	...	4	...
Lead.....	34	...	...	...	34	...

	Total	RAIL		VESSEL		Other
	Tons	In	Out	In	Out	
Lead Pipe.....	8	...	...	1	7	...
Leather.....	6	...	...	6	...	...
Lime.....	736	736	...	...	...	...
Liquors.....	1,209	430	202	577	...	...
Lye.....	74	74	...	...	...	...
Macaroni.....	31	15	...	...	16	...
Machinery.....	3,196	1,911	1,256	29	...	...
Matches.....	25	25	...	...	...	...
Meals.....	2,871	...	2,862	...	9	...
Meat, Cured.....	362	362	...	...	...	...
" Fresh or Fro-						
zen.....	881	881	...	...	...	...
" In tins.....	117	105	...	11	1	...
Metalware.....	710	670	40	...	...	...
Middlings.....	589	...	...	553	36	...
Milk, in Tins.....	418	335	12	71	...	...
Milk Powder.....	17	17	...	...	...	...
Mineral Waters.....	12	...	...	...	12	...
Molasses.....	2,832	1,160	1,663	...	9	...
Mustard.....	3	...	...	3	...	...
Nails.....	63	...	...	26	37	...
Oakum.....	40	36	...	...	...	4
Oats, Rolled.....	106	...	...	90	16	...
Oilcake.....	293	...	293	...	...	...
Oil, Coal.....	262	...	262	...	...	...
" Crude.....	306,827	1,423	1,070	25,022	279,312	...
" Linseed.....	734	17	632	...	85	...
" Lubricating.....	1,793	913	877	3	...	...
" Refined.....	17,928	22	269	17,637	...	...
" Seal.....	65	...	...	65	...	...
" Tar.....	573	...	573	...	...	...
" Various.....	27	...	...	27	...	...
Oilcloth.....	19	...	...	...	...	19
Oyster Shells.....	188	188	...	...	...	...
Paints.....	344	225	67	4	48	...
Palm Leaves.....	29	29	...	...	...	...
Paper, Boxes.....	5	...	...	...	5	...
" Mfrs of.....	13	...	...	...	13	...
" Printing.....	22	22	...	...	...	...
" Roofing.....	122	96	3	...	23	...
" Stock.....	3,332	102	3,230	...	...	...
" Toilet.....	84	...	...	81	3	...
" Wrapping....	68	51	...	...	17	...
Paving Blocks.....	36	36	...	...	...	...

	Total Tons	RAIL		VESSEL		Other
		In	Out	In	Out	
Peas.....	144	71	...	73	...	...
" Split.....	20	...	20	...	...	...
Phosphates.....	50	50	...	...	...	...
Pickles.....	17	...	...	8	9	...
Pipe Fittings.....	11	11	..	...	...	...
Pitch.....	11	...	...	...	11	...
Plaster.....	324	320	4	...	...	...
Porcelain.....	259	...	...	259	...	...
Poultry.....	334	334	...	...	...	...
Preserves.....	123	117	...	5	1	...
Rags.....	3,537	376	3,124	36	1	...
Reels, Cable.....	4	...	...	4	...	...
Refining Earth.....	464	464	...	...	...	...
Refrigerators.....	166	166	...	...	...	...
Rice.....	657	...	...	488	169	...
Rivets.....	20	20	...	...	...	...
Rope.....	117	97	18	2	...	...
Salt, Coarse.....	53	...	48	...	5	...
Salt, Fine.....	2,978	2,978	...	...	...	...
Sand.....	86,121	1,246	...	58,189	53	26,633
Sawdust.....	198	198	...	...	...	...
Scrap Brass.....	193	130	63	...	...	...
Scrap Copper.....	23	...	23	...	...	...
Scrap, Iron and Steel.	11,149	2,837	8,312	...	...	...
Scrap, Lead.....	73	73	...	...	...	...
Scrap Leather.....	79	..	79	...	...	...
Scrap Rope.....	45	13	32	...	...	...
Scrap Tin.....	9	...	...	9	...	...
Sea Grass.....	9	...	...	9	...	...
Seeds.....	2	...	...	...	2	...
Shingles.....	8	...	...	...	8	...
Ship Stores.....	290	7	263	...	20	...
Shooks.....	731	731	...	...	...	...
Shorts.....	60	40	...	...	20	...
Slag.....	80	...	80	...	...	...
Slate.....	952	142	810	...	...	...
Soap, Common.....	164	115	...	...	49	...
Soap, Toilet.....	891	890	...	...	1	...
Soda Ash.....	21	21	...	...	...	...
Soda Sal.....	123	121	...	...	2	...
Spices.....	22	...	...	21	1	...
Spoolwood.....	1,873	1,873	...	...	...	...
Starch.....	108	108	...	...	...	...
Stationery.....	9	...	...	8	1	...

	Total Tons	RAIL		VESSEL		
		In	Out	In	Out	Other
Steel Angles.....	248	245	...	...	3	...
Steel Beams.....	1,764	1,708	56	...	...	...
Steel Billets and Blooms.....	22,559	22,559	...	...	...	...
Steel Plates.....	2,563	2,096	465	...	2	...
Steel Rails.....	8,243	8,023	165	23	10	22
Steel Rods.....	6,453	1,037	4,704	...	9	703
Steel, Structural....	16,681	3,391	11,737	...	6	1,547
Steel Tanks.....	302	163	136	3	...	...
Stone, Crushed.....	73,831	1,336	...	1,179	16,691	54,625
Stoneware.....	115	115	...	...	...	...
Stoves.....	509	489	20	...	...	...
Sugar, Maple.....	62	21	41	...	...	...
Sugar, Raw.....	5,442	5,442	...	...	...	...
Sugar, Refined.....	79,189	1,574	24,974	15,150	33,710	3,781
Sulphates.....	10	...	...	10	...	...
Sulphur.....	30	15	15	...	...	...
Sundries.....	183	...	...	76	107	...
Syrup, Corn.....	19	19	...	...	...	...
Syrup, Maple.....	48	...	48	...	...	...
Tapioca.....	58	...	...	57	1	...
Tar.....	50	...	50	...	...	...
Tea.....	2,322	931	86	1,304	1	...
Thermite.....	7	7	...	...	...	...
Tie Plates.....	667	...	...	667	...	...
Tinware.....	518	183	331	...	4	...
Tomato Paste.....	16	16	...	...	...	...
Tools.....	6	...	...	...	6	...
Toys.....	36	...	...	36	...	...
Trunks.....	2	...	2	...	...	...
Turpentine.....	13	...	...	...	13	...
Valves.....	4	...	...	4	...	...
Vegetables, in Tins...	298	158	...	127	13	...
Vegetables, Raw....	17,191	15,697	1,325	145	24	...
Vinegar.....	5	...	3	2	...	...
Wallboard.....	185	185	...	...	...	...
Washing Machines...	74	74	...	...	...	...
Wheelbarrows.....	13	13	...	...	...	...
Window Screens....	12	12	...	...	...	...
Window Shades....	5	...	...	...	5	...
Wines.....	14	...	...	14	...	...
Wire, Cable.....	24	...	24	...	...	...
Wire, N.O.S.....	883	814	52	1	16	...
Wire Rope.....	24	24	...	...	...	...

	Total Tons	RAIL		VESSEL		
		In	Out	In	Out	Other
Woodenware.....	349	341	...	8	...	...
Yarns.....	35	35	...	...	...	...
Zinc.....	1,238	1,238	...	...	...	...
	2,927,181	174,144	151,832	2,010,265	501,437	89,503

MISCELLANEOUS

	Total	RAIL		VESSEL		
		In	Out	In	Out	Other
Brick (Number)..	234,100	234,000	.....	.....	.....	.....
Firewood (Cords)....	2,200	805	.....	1,395	.....	.....
Grain Doors (Cars).....	179	11	168	....	...	....
Lumber, Dressed (Feet).....	4,962,835	1,161,119	44,000	3,700,401	47,315	10,000
Lumber, Rough (Feet).....	84,191,662	26,044,315	180,000	53,763,245	106,621	4,097,481
Ogilvie F.M. (Cars).....	3,334	1,065	2,269	....	....	....
St. John Freight (Cars).....	919	919	....	....	...	....
Railway Ties (Number)..	15,533	13,958	1,575	....	....	....

Estimated Tonnage of Above

COMMODITY	TONS
Brick.....	585
Firewood.....	2,200
Grain Doors.....	2,148
Lumber, Dressed.....	9,305
Lumber, Rough.....	157,859
Ogilvie Cars.....	133,360
St. John Freight.....	27,570
Ties.....	777
Total Miscellaneous.....	333,804
Domestic Total.....	2,927,181
Grand Total.....	3,260,985

TONNAGE SUMMARY, 1929

	RAIL	VESSEL	OTHER	TOTAL
Domestic.....	325,976	2,511,702	89,503	2,927,181
“ Brick, etc.....	216,675	109,427	7,702	333,804
Domestic Total.....	542,651	2,621,129	97,205	3,260,985

Distribution after Import

	RAIL	VESSEL	OTHER	TOTAL
Import.....	223,000	209,119	2,824,872	3,256,991

Carried before Export

	RAIL	VESSEL	OTHER	TOTAL
Export.....	779,928	2,346,936	292,032	3,418,896

Distribution of Tonnage

	RAIL	VESSEL	OTHER
Domestic.....	542,651	2,621,129	97,205
Import.....	223,000	209,119	2,824,872
Export.....	779,928	2,346,936	292,032
	1,545,579	5,177,184	3,214,109

Total Tonnage all Sources

Import.....	3,256,991
Export.....	3,418,896
Domestic.....	3,260,985
Grand Total.....	9,936,872

STATEMENT OF COAL IMPORTS

Foreign Coal Imported Ex Vessel

British Anthracite.....	501,503 tons
Russian Anthracite.....	83,619 “
<hr/>	
Total Anthracite.....	585,122 tons
American Bituminous.....	85,589 tons
British Bituminous.....	26,796 “
<hr/>	
Total Bituminous.....	112,385 tons
Anthracite.....	585,122 tons
Bituminous.....	112,385 “
<hr/>	
Total Ex Vessel....	697,507 tons

Other Coal Imports

Canadian Bituminous (ex Vessel from Nova Scotia).....	1,543,765 tons
American Anthracite (ex Rail).....	34,152 “
Total Canadian.....	1,543,765 tons
Total Foreign Ex Vessel.....	697,507 “
Total Foreign Ex Rail.....	34,152 “
<hr/>	
	2,275,424 tons

HARBOUR POLICE DEPARTMENT

The Harbour Commissioners' Police Force performed its important duties with customary efficiency and satisfaction during the year 1929. No small part of the credit for the good order, safety of property and absence of pilfering or rowdiness within the precincts of the Harbour is due to this force, which maintains day and night patrol from Windmill Point, in the extreme Western part of the Harbour, to the Imperial Oil Wharf at Section 100.

At the commencement of the season of navigation the force consisted of a Chief, three Captains and sixty-two Constables. During the season deaths, illness, resignations and dismissals reduced this number to fifty-five Constables. In the Winter season twenty-seven Constables are on duty.

During the year 136 arrests were made for various offences in the Harbour, including four of attempted suicide.

Twenty-three deaths occurred on the Harbour front during 1929, viz.:—

- 10 accidental deaths
- 8 drownings
- 4 sudden deaths
- 1 suicide

Sixty-eight accident cases were rendered first aid by the Police Department during the year.

Carters to the number of 7,681, loading and delivering merchandise at various points along the waterfront, were checked by the traffic constables.

Police supervision was maintained during the arrival and departure of passenger vessels, all taxicabs and other vehicles being lined up, and the number of each vehicle leaving the wharf with passengers or baggage being noted. Many articles left in taxicabs were recovered by this system.

Passengers to the number of 55,193 arrived at the Port from overseas and the West Indies, while 58,040 passengers sailed.

The motor car and two motor cycles attached to the Police Department were in constant use during the year, and covered a total of 43,414 miles.

FRESH WATER SERVICE

The Commissioners' service of fresh water to vessels was extensively used during 1929. It will be noted that while the number of services to vessels decreased from the previous year, the volume of water supplied increased considerably. The explanation of this is to be found in the growing practice of utilizing water as ballast, and the shrinkage in exports in 1929, notably of grain, made it imperative on vessels in many instances to fill their tanks with as much as 2,500 tons of water.

The shipping interests find that fresh water is a cheap and convenient and clean form of ballast, and should preliminary water ballast be taken on board, and it is subsequently found that cargo is available, the emptying of the water is a simple matter.

The following statement gives the number of services rendered by this department, and the volume of water supplied to vessels for the past ten seasons of navigation:—

	No. of Services	Volume of Water Cu. Ft.
1920.....	507	2,179,550
1921.....	520	1,885,900
1922.....	617	2,900,000
1923.....	567	2,300,000
1924.....	731	2,684,100
1925.....	803	3,379,900
1926.....	682	2,579,200
1927.....	838	3,004,000
1928.....	1,020	5,260,000
1929.....	880	6,041,000



THE HARBOUR COMMISSIONERS' COLD STORAGE WAREHOUSE

COLD STORAGE WAREHOUSE

The year's operation at the Commissioners' warehouse and cold storage plant was conducted according to regular routine. The reputation which this Harbour utility has set up for careful and intelligent handling of perishable products, destined for shipment overseas and for local distribution, was maintained during 1929. The produce trade is familiar with the excellence of this refrigeration plant, and realize its favourable location, on the tracks of the Harbour railway, and within easy distance of the piers where the great trans-Atlantic lines have their sailings.

Total tonnage of merchandise handled at the warehouse in 1929 was 28,828 tons. The average quantity of goods in store during the year was about 5,000 tons.

Increases were registered in quantities of fruits, vegetables and nuts held in storage. Meats, which constitute one of the most important commodities stored, showed a slight reduction from the previous year.

ENGINEERING DEPARTMENT

The main items of Construction and Repair Work, during the past season, are as follows:—

Wharves

Continuation of Bickerdike Pier Extension.

Continuation of Windmill Point Wharf Extension.

Continuation of Reconstruction of Upstream Side of King Edward Pier.

Continuation of Shore Wharf Construction, Section 33.

Reconstruction of Laurier Pier, Section 42.

Completion of 1,000 ft. Shore Wharf at Sections 56-58.

Construction of New Industrial Wharf, Section 105.

Extension to Flood Wall, Section 71.

Buildings

Completion of Extension to Shed No. 15, Jacques Cartier Pier.

Construction of Rest and Office Rooms Building at Elevator No. 1.

Removal of Shed No. 15A.

Sewers, Intake Pipes and Water Mains

Extension of Intake and Sewer Outlets, Section 33.

Construction of Fuel Intake Pipes, Sections 57-58.

Construction of Molasses Intake Pipe, Sections 57-58.

Construction of 10" Water Main, Section 29, Delorimier Ave.

Paving

Outer Ramp of New Extension to Shed No. 15.

Railway Crossing, Sheds 24 and 25.

Grain Loading Platform, Elevator No. 3 Annex

Railway Construction

Tracks alongside Bickerdike Pier.

Tracks alongside Elevator No. 3 Annex.

Industrial siding—Jos. Elie & Co.

Industrial siding—Canada West Indies Molasses Co.

Sundry Items of New Work

Conveyor System Equipment in Gallery 15.

Travelling Grain Loaders, Galleries 7 and 9.

Guard Pier Fire Protection and Steam Heating Systems.

Elevator No. 3 Car Puller.

Dredging

Drilling, Blasting and Dredging of Inland Basin (between Bickerdike and Mackay Pier) and its Entrance.

Drilling, Blasting and Dredging of part of Windmill Point Basin.

Dredging of part of New Channel at Sections 58-61.

Dredging crib seats at King Edward Pier, Laurier Pier and Sylvestre Oil Wharf, Section 105, and filling cribs.

Maintenance Dredging in channel to Canada Cement Wharf, in Windmill Point Basin, between Alexandra and King Edward Pier, and at Sections 40 and 100.

Widening of the embankment at Sections 56-61.

Electrical Branch

Transmission and Service Line Extensions.

Overhead Trolley Lines for Ship Loaders.

Water Cooler, No. 5 Sub-Station.

Despatchers' Telephone System.

Montreal Harbour Bridge Lighting.

Maintenance

Wharves, roads, sheds, elevators, warehouse and power house equipment, floating plant, hoists and other maintenance work.

NEW WHARVES

Continuation of Bickerdike Pier Extension

Two reinforced concrete cribs were sunk in the upstream or inner part of the Bickerdike Basin, New Wharf under construction at the downstream end of the Bickerdike Pier.

The two cribs built under contract by the Atlas Construction Co. are 112' 6" long, 41' wide at the base and were sunk in approximately 32' 3" of water.

These new cribs were raised to cope elevation 119.00, with cope wall, bollards, rings and ladders provided.

The reclamation work behind the 1,000 lin. ft. of cribs finished during the season 1928 was practically completed this year, together with a considerable amount of back fill behind the two new cribs sunk during 1929.

Continuation of Windmill Point Wharf Extension

Two reinforced concrete cribs were added to this Shore Wharf to permit of the extension of the Grain Conveyor Gallery along the entire face of the Windmill Point Wharf.

The two cribs were built by the Atlas Construction Co. and were of the following dimensions: 112' 6" long, 41' wide and were sunk to 31' 0" below low water elevation on a prepared crib seat. They were raised to cope elevation 119.00 with cope wall, bollards, rings, drains and ladders provided.

To make this project possible, the Coal Towers, previously used by the Century Coal Co. and located over the site of these cribs, were demolished. The old wooden cribs and superstructure were removed and the site dredged and prepared for the concrete cribs. The space or gap between the new and the old wharf was blocked with piles to the low water level and capped with a wooden superstructure or crib to high level mark, or cope elevation 119.00.

Due to the fact that foundation piers to receive the structural steel for the Conveyor Gallery could not be completed before the close of navigation, it was not found possible to reclaim all the fill at the back of the new crib. This, however, it is expected, will be completed before the opening of navigation.

Continuation of Reconstruction of Upstream Side, King Edward Pier

The work of reconstructing the Upstream Side of King Edward Pier started late last year, and was carried on throughout the winter months. That portion of the scheme involving the sinking of steel caissons and the construction of the concrete cope wall over these cylinders, as described in last year's Annual Report, and extending over the entire length of Sheds Nos. 7 and 9, was completely finished, in all a length of 1,046.85 ft., of which 1,014.5 ft., was completed before the opening of navigation.

Late in September, as soon as conditions permitted, the Foundation Co. resumed their contract and the work of demolishing the concrete superstructure of the outer and part of the return end of King Edward Pier was started.

This work was carried out very expeditiously and the crib seats were prepared to receive the three reinforced concrete cribs, irregular in shape, which were sunk and raised to elevation 108.00 only a few days previous to the general freeze-up.

One crib 111' 0" long, 40' 0" wide in 36.73' of water, being the first crib on the Upstream Side.

One crib 108' 0" long, 40' 0" wide in 37.88' of water, being the second crib and forming the return end of the Pier.

One crib 74' 0" long, 40' 0" wide in 37.96' of water, being the first crib on the outer end or face of the Pier.

Continuation of Shore Wharf Construction. Sections 33-34

Two reinforced concrete cribs were sunk at Sections 33-34 during the season:

One crib 112' 0" long, 42' 0" wide in 36' of water, being the first upstream crib section of the fifth 500' sawtooth wharf.

One crib 112' 0" long, by 42' wide in 36' of water, being the second crib section.

The concrete quay wall superstructure over these two and the other eight cribs which had previously been built to low water level, were raised to cope elevation 119.00, with bollards, ladders, drains, mooring rings, tie rods and tie rod blocks provided, thus completing 1,142 lin. ft. of wharf.

The area behind the second and third sawtooth wharf was completely back filled and a great portion of the fourth sawtooth was also reclaimed.

Reconstruction of Laurier Pier, Section 42.

To meet present and future requirements resulting from the construction of the new terminal Elevator No. 3, it

was found impossible to make use of the old Laurier Wharf in its present condition, except as a core for a new high level pier head, around the present fast decaying timber pier.

The adopted plan for the reconstruction of this pier consists of sinking a series of permanent concrete cribs on the upstream and downstream sides as well as the outer end of the existing pier, thus increasing its width by approximately 90 ft. and its length by 25 ft., the new pier to be raised to high level cope elevation 119.00.

Towards the end of the season a start was made on the work of widening the west or upstream side of the pier. In all, five crib seats were prepared and matted with bags filled with stone. Only four reinforced concrete cribs were sunk to low water elevation, one crib seat being left open for construction purposes:

One crib 107' 0" long by 42' 0" wide in 35.32' of water, being the first crib sunk on the upstream side of the pier.

One crib 107' 0" by 42' 0" wide in 35.70' of water, being the second crib.

One crib 107' 0" by 42' 0" wide in 36.00' of water, being the third crib.

One crib 112' 5" long by 42' 0" wide in 36.06' of water, being the fourth crib sunk.

The first two cribs sunk were handled and placed over the crib seats without much trouble. The third and fourth proved to be more difficult to handle on account of the strong current existing along the western face, or upstream side of the pier.

To overcome this difficulty, and to permit of the preparation of the crib seats in this swift current, a current diverter, consisting of a steel frame anchored in a vertical position, faced or lined with as many 50' reinforced concrete piles as required, was lowered and placed into position to divert the current clear of the area over which the divers had to work for the preparation of the crib seats. Two crib seats were prepared with this device and little or no trouble was experienced by the divers



INTERIOR OF ONE OF THE HARBOUR SHEDS

in the performance of their work. Some 82 concrete piles, 50 ft. long, were manufactured on the site for use with the current diverters.

The cribs were filled, rock placed along the front or toe of the crib, to guard against possible scour, together with a number of scows of rock spread along the bottom face of the crib. The backs of the cribs were also reinforced with rock as a protective measure against any possible ice shove, which is very heavy at this point.

Completion of 1,000' Shore Wharf, Sections 56-58

In the early spring, when the water had subsided to a point where the tops of the cribs were clear of water, a start was made by the Contractors, Robertson & Janin, Ltd., on the construction of the quay wall superstructure.

1,018 lin. ft. of cope wall were completed, including tie rods, 39 tie rod anchor blocks, bollards, drains, ladders, mooring rings, etc.

A contract for the filling in of the area behind the new wharf and the railway embankment was given to the General Dredging Co.

A bank was formed at both ends of the wharf wall running at right angles from the wharf to shore, thus forming a large basin with overflow pipe at both ends. The electric suction dredge "General Montcalm" was then placed in the entrance channel to Vickers Dry Dock, on a line about 150 ft. from the new wharf and parallel to it, with instructions to dredge to a depth not greater than 40 ft. at low water and work in an easterly direction to connection with the new channel under construction to Racine Wharf. The back filling was finished to full height, thus completing in the space of one year the construction of 1,000 lin. ft. of wharf and the reclamation of approximately 250,000 sq. ft. of land from a depth varying from 30 to 40 ft.

Construction of New Industrial Wharf at Section 105.

The work of constructing a single crib concrete wharf for the Sylvestre Oil Co. was started in the month of September, at the foot of Dennis Avenue, Montreal East.

The distance from the line of the face of the new wharf to the shore is approximately 550 ft. and a mole had to be built to establish communication with the mainland. Part of this mole was constructed last year and it is expected that it will be completed early next year.

One crib 107 ft. long by 42 ft. wide in 31.20 ft. of water was sunk and raised to elevation 104.00

To permit the Sylvestre Oil Co. to receive their first tanker, scows were anchored in mid stream and connected to the mainland by means of a platform resting on wooden piles driven into the river bed, over which pipe lines were stretched and connected to the storage tanks on the mainland.

Extension to Flood Wall, Section 71:

At the request of the Weaver Coal Co., the retaining or flood wall erected on the cope at the upstream end of the Vulcan Wharf was increased in height by 6 ft. over its entire length, viz., 75 ft.

This was done to give a greater protection to the moveable towers or cranes which are stored behind this wall throughout the winter months, during the high water period of ice shoves in the spring. This wall was reinforced at the back or land side with steel trusses or sway braces.

RECAPITULATION OF WHARF CONSTRUCTION

Concrete Cribbs Sunk to Low Water Level:

	No.	Length on Cope Line Lin. ft.	Total Lin. ft.
Section 33.	2	229'6"	
Laurier Pier.....	4	437'6"	
		<hr/>	667'0"

Concrete Cribbs Sunk to Elevation 104 and Completed:

Section 105.	1		107'0"
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Concrete Cribs Sunk and Completed to Elevation 108:

	No.	Length on Cope Line Lin. ft.	Total Lin. ft.
King Edward Pier	3		338'0"

Concrete Cribs Sunk and Completed to Elevation 119:

Bickerdike Basin	2	229'0"	
Windmill Point Basin	2	228'6"	
		-----	457'6"

Quay Wall Completed to Cope Elevation 119:

Section 33	1,142'0"
Section 58	1,018'0"

The extent of the Wharves and Piers at the end of the Season of 1929 is as follows:—

30 ft. depth and over at

O.L.W.	35,254 lin. ft. or 6.6768 miles.
25 ft. to 30 ft. depth	14,869 do 2.8161 do

Total deep draught	50,123 do 9.4929 do
20 ft. depth and under	1,824 do 0.3454 do

Total Wharfage end of 1929..	51,947 do 9.8383 do
Total Wharfage end of 1928..	51,606 do 9.7738 do

Increase in 1929	341 do 0.0645 do
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BUILDINGS**Completion of Extension to Shed No. 15, Jacques Cartier Pier:**

The extension of Shed No. 15, as described in last year's Annual Report, was completed for the opening of navigation.

The length of the shed, which is of the standard two-deck type, with a double belt conveyor gallery, was increased by 225 ft. and its width by 95 ft.

Construction of Rest and Office Rooms Building at Elevator No. 1

To replace the numerous old shanties located alongside Elevator No. 1, downstream end, river front, which were all in a dilapidated condition and a fire hazard, it was decided to build a series of offices, rest rooms and work shop to house all under one roof the grain shovellers and the men belonging to the Maintenance Force of the Transit Sheds.

A semi-fireproof building 100 ft. long by 15 ft. wide and 10 ft high, consisting of a wooden frame, lined inside with asbestos material and sheeted outside with galvanized corrugated iron and equipped with steel sashes, kalameined doors, etc., was erected and completed just previous to the close of navigation, the foundation consisting of a concrete slab, 102 ft. long by 16 ft. wide and 6 inches thick, laid over the wharf pavement.

This building consists of two rest rooms, two offices, one tinsmith's workshop and one small store-room.

Removal of Shed No. 15A

To make room for the extension of Shed No. 15, it was necessary to remove the small structural steel shed No. 15A, located at the end of Jacques Cartier Pier.

This shed was taken down and stored for re-erection whenever conditions permit.

SEWERS, INTAKE PIPES AND WATER MAINS

Extension of Intake and Sewer Outlets, Section 33

During the construction of the fourth sawtooth wharf at Section 33, two 16" steel pipes some 40 ft. apart were laid through the concrete crib to provide an extension to the intake and sewer outlet of the Dominion Textile Co.'s Plant, St. Ann's Mill.

That portion of the intake and sewer pipe from the face of the old wooden wharf to the back of the new high level shore wharf was laid and connected this year.

To carry out this work twenty 55 ft. round jack pine piles were driven to carry the intake and sewer pipes, and on account of the difference in elevation between these pipes, the piles had to be staggered to suit and two sets of horizontal supports placed one over the other to carry the pipes. The intake pipe 148 ft. in length and the discharge pipe 160 ft. in length and one small section 8 ft. in length were laid during the season.

Construction of Fuel Intake Pipes, Sections 57-58

The Jos. Elie & Co. during the year constructed a fuel storage plant on a property adjoining the new Coal dock at Sections 56-58. They obtained from the Harbour Commissioners berthing facilities and permission to lay across this new dock two 8" steel pipes some 300 ft. long for the purpose of unloading their fuel material directly from tankers through these pipes to their storage plant.

The work of laying these pipes was carried out by the firm under the supervision of the Engineering Department after the site had been prepared by the Commissioners' construction forces.

Construction of Molasses Intake Pipe

The Canada West Indies Molasses Co. also established themselves on a property adjoining the new Coal dock, Sections 56-58, and constructed steel tanks or reservoirs for the storage of molasses.

They obtained berthing facilities and permission to install on the new dock a 12" intake pipe approximately 500 ft. long for the purpose of unloading their material direct from tankers into the storage tanks.

The work of preparing the site and the installation of the pipe line was carried out by the Commissioners' forces.

Construction of 10" Water Main, Section 29

The old 2" water service pipe from the City at the foot of Delorimier Avenue or Jail Ramp was inadequate to meet the requirements along the water front in the vicinity of Delorimier Avenue.

To serve this district and afford a proper fire protection from Papineau Avenue to Poupart Street, it was decided to ask the City of Montreal for a new water intake at the foot of Delorimier Avenue.

Consequently a new 10" water main, with the customary meter chamber, was built from Notre Dame Street across the C.P.R. and H.C.M. railways to the roadway along the water front and the necessary connections tapped from this main to replace the old service.

It is then proposed to join up this new intake with that of Papineau Avenue and then east to Poupart Street so as to establish a water belt with hydrants, etc., from Papineau to Poupart Street.

PAVING

Outer Ramp of New Extension to Shed No. 15

The outer ramp at the end of the new extension to Shed No. 15 was paved with granite blocks. In all an area covering approximately 211 sq. yds. of pavement was laid.

Railway Crossing, Sheds 24 and 25

The old wooden railway crossing leading to the hoist and entrances of Sheds 24 and 25 was lifted and replaced with a scoria block crossing resting on a concrete base. In all 417 sq. yds. of pavement was laid.

Grain Loading Platform, Elevator No. 3 Annex

The track and the space between the Elevator and the track under the Grain Loading Platform was paved with a concrete floor for a distance or length of approximately 312 ft. and a width of 12 ft.

In addition to the preceding items, some 2,045 sq. yds. of pavement was lifted and repaired during the season.

RAILWAY CONSTRUCTION

Tracks alongside Bickerdike Pier

The extension of railway tracks along the face of the New Bickerdike Pier Wharf amounted to 1,180 lin. ft. and was carried out by the usual construction forces.

Tracks Alongside Elevator No. 3 Annex

An extension of 580 lin. ft. was added to the railway tracks alongside the new Elevator No. 3 Annex. This track is to be used as a grain loading siding.

Industrial Siding, Jos. Elie & Co.

An extension or industrial siding for Jos. Elie & Co. amounting to 284 lin. ft. of track was constructed during this season.

Industrial Siding, Canada West Indies Molasses Co.

An extension or industrial siding for the Canada West Indies Molasses Co. amounting to 282 lin. ft. of track was constructed during the season.

In addition to above items, the usual track maintenance from Section 12 to 101, including the replacement of rails, turnouts, switches, cross ties, etc., was carried out throughout the season by the railway section gangs.

The mileage of the Harbour Commissioners' Railway was increased during the season by 2,282 lin. ft., or 0.432 mile.

SUNDRY ITEMS OF NEW WORK

Conveyor System:

The installation of conveyor equipment in the extension to Gallery 15 was completed and placed in service at the opening of the navigation season.

Travelling Grain Loaders:

Consideration was given to the difficulty of loading high ships from the present grain conveyor system, particularly

during the period of high water. In order to provide means for quick loading under these conditions, two travelling grain loading machines were designed and installed at Galleries 7 and 9. The first of these machines was tested on November 22nd, 1929, and found satisfactory.

Guard Pier:

A Fire Protection System was installed and completed. It comprised a pumping station housing two pumps: One a 500 gallons per minute Fire Pump and one 50 gallons per minute Service Pump, both electrically driven. 1,500 ft. of 6" C.I. water pipe, 5 fire hydrants were installed and the necessary hose and reels were provided. Good fire protection is thereby provided for vessels and plant in the vicinity of the Guard Pier the whole year round.

A steam heating system was installed in the stores and office buildings, steam being obtained from a Victory Boiler in the pump house. This boiler was transferred from the Harbour Yard Shops.

Elevator No. 3, Car Puller:

The foundations for a Car Puller were constructed at No. 3 Elevator Extension and the fabrication of the machinery was started in our shops.

DREDGING

Inland Basin

The work of dredging this basin, located between the Bickerdike and the Mackay Piers, was continued in conformity with the plan laid down years ago. The body of the basin from the line of the end of Bickerdike Pier to a line about 1,300 ft. west thereof and for a width of about 240 ft. from the face of the wharf, has been cleared of all obstructions down to 30 ft. at L.W.

A bank about 40 ft. wide and 1,000 ft. long was made west of the existing wharf for the purpose of berthing grain barges and other inland vessels.



THE BEGINNINGS OF MONTREAL AS A CITY AND A HARBOUR

Inland Basin Entrance

A shoal 80 ft. wide and 225 ft. long at the end of Bickerdike Pier was drilled, blasted and nearly all removed.

Windmill Point

An area approximately 300 ft. in length by about 75 ft. in width in the Windmill Point Basin, adjacent to the section of the wharf just completed at Section 8N, was drilled, blasted and dredged to a depth of 30 ft. at L.W. This basin, from its entrance to about 1,400 ft. up, is now dredged to its full width, down to 30 ft. at L.W.

New Channel, Sections 58-61

Work on the new channel to connect the entrance channel to the Vickers Dry Dock and the inner natural channel which ends upstream at the Racine Pier, was continued during the season of 1929. The material obtained therefrom was used for the back filling of the new wharf development at that location.

Dredging Crib Seats

The Dredging Fleet during last season performed the necessary dredging work for the preparation of the crib seats in the reconstruction of the outer end of King Edward Pier and Laurier Pier, and the construction of the Sylvestre Oil Wharf.

The filling of the cribs, after they had been sunk with the aid of some of the fleet units, was done by Harbour derricks at Laurier Pier and the Sylvestre Oil Wharf.

The mole connecting the Sylvestre Oil Wharf with the mainland, as well as the back filling at the new Wharf Development at Sections 56-58, was also carried out by Dredging Fleet units.

Maintenance Work

The cleaning up of the channel to the Canada Cement Wharf, from the west end of the Imperial Oil Wharf to the Canada Cement Wharf, was carried out to completion down to 28 ft. at L.W.

A portion of the Windmill Point Basin, requiring immediate attention on account of silting from the raceways, was also cleaned up.

An area exceeding 20,000 sq. yds. in the basin between Alexandra and King Edward Pier, which was found not to be in very good condition, was also cleaned up.

The berth at Section 40, 200 ft. in length and 100 ft. in width, was cleaned up after obstacles had been reported.

Another berth, at the Imperial Oil Wharf, Section 100, was reported to be in an unsatisfactory condition. A dredge was placed at that location and cleaned up an area measuring 750 ft. by 120 ft.

Widening of Embankment at Sections 56-61

In anticipation of railway requirements due to the new wharf development at Section 56-58, the embankment from Section 58 down to Racine Pier, Section 62, was widened by approximately 30 ft.

Some of the Fleet units were also engaged in repairing damage done by the ice to the railway embankment from Sections 67 to 76 and 86 to 96; for a length of approximately 600 ft. along the bank outside the Vickers plant; at the Government Wharf at Longueuil; the east side of the Canada Cement Wharf at Section 97; the Frontenac Oil Wharf Mole, and the small wharf at the Town of Pointe-aux-Trembles. In all cases the work consisted of refacing with rock by derrick.

General:

Tug "B. Paul," which sank after having collided with the concrete cribs at Section 34, and S.S. "Victoria," sunk through age at the entrance of the Inland Basin, were raised by the Dredging Fleet Units.

The Harbour Dredges and Derricks co-operated with the contractors during the year in dredging seats for the 14 cribs which were sunk; in placing the necessary stone mattresses and in filling the cribs after they had been placed on these seats.

Testing and sweeping was done principally in the main portion of the Harbour; also in the new channel at Sections 58-61; at the Imperial Oil and Frontenac Oil Wharves and at the Canada Cement Wharf.

The following are the quantities of dredging and filling for the season:—

Dredging:		Cu. Yds.	Cu. Yds.
		(Scow)	(Scow)
Rock:—			
Inland Basin.....	172,820		
Section 8.....	30,850	203,670	
<hr/>			
Other Material:			
Section 8, Crib Seats, etc.....	30,850		
Sections 9-10, Maintenance...	6,600		
Section 14.....	15,650		
King Edward Pier, Demol'n..	57,150		
Section 33-34, Crib Seat.....	2,850		
Section 40, Maintenance.....	2,200		
Section 42, Crib Seats.....	8,300		
Sections 57-60, New Wharf...	17,850		
Sections 97-100, Channel.....	29,350		
Section 101, Maintenance....	11,100		
Section 105, Crib Seats.....	7,200		
Section 105, Channel.....	20,550		
		<hr/>	209,650
<hr/>			
Total Dredging.....			413,320

Filling (By Derrick):

Rock:	
Inland Basin.....	36,225
Section 8N.....	3,850
do 33.....	34,975
do 42.....	16,800
do 56-57.....	31,050
do 58-61.....	46,325

Railway Bank.....	21,300	
Longueuil Wharf.....	1,800	
Sections 97-100.....	3,300	
Sylvestre Wharf.....	5,125	
Guard Pier.....	600	
	<hr/>	201,350
Laurier Pier (By Dumpers).....	2,320	
	<hr/>	203,670
Other Material:		
Inland Basin.....	25,075	
Section 8N.....	14,550	
do 33.....	35,150	
do 42.....	18,300	
do 58-61.....	24,475	
do 97-100.....	15,775	
Sylvestre Wharf.....	45,875	
Guard Pier.....	4,900	
	<hr/>	184,100
Section 33 (By Dumpers)....	2,630	
Inland Basin do	7,890	
Spoil Bank do	15,030	
	<hr/>	25,550
	<hr/>	200,650
Total Dredged Material to Fill.....		413,320

Sundry Items of Filling (by Derrick):

Clammed Material:

Inland Basin.....	2,950	
Section 8N.....	1,750	
do 42.....	4,325	
do 58-61.....	2,600	
Sylvestre Wharf.....	300	
Guard Pier.....	150	
	<hr/>	12,075

Ballast:

Inland Basin.....	250	
Guard Pier.....	615	
	<hr/>	865

Wharf Refuse:

To spoil bank.....	4,550
	<hr/> 4,550

Total Sundry Items of Filling by Derrick..... 17,490

Earth, Cinders, etc., from City Contractors (by Team)

	Cu. Yds. (Estimated)
Bickerdike Pier.....	18,350
Elevator "B".....	17,800
Molson's Warehouse.....	1,200
Sections Nos. 29-30.....	1,500
do 30-31.....	1,350
do 31-32.....	92,500
do 48-49.....	2,000
	<hr/>
Total Fillings by Teams.....	134,700

ELECTRICAL BRANCH**Power and Operation:**

The Harbour Commissioners purchased, under contract, electric power from the Montreal Light, Heat & Power Co., for their requirements, as follows:

	H.P. Hours
Cold Storage Warehouse.....	3,775,298
Elevator No. 1 and Conveyors.....	2,803,056
Elevator No. 2 and Conveyors.....	1,948,136
Elevator No. 3 and Conveyors.....	3,300,882
Elevator "B" and Conveyors.....	1,354,851
Freight Hoists.....	42,218
Harbour Lighting.....	908,379
Harbour Yard.....	389,704
Transit Shed Lighting.....	671,454
Railways (Electric).....	3,944,730
Sub-Station No. 1.....	59,249
Elevator Lighting.....	314,610
Electric Dredge.....	861,984
Miscellaneous.....	603,989

Lighting of the High and Low Level Wharves:

All the lighting of the high and low level wharves for the season of 1929 was carried on by the Harbour Commissioners' Electrical Department, the power being supplied through the several sub-stations.

The number of lamps in service varied from time to time during the year, reaching a maximum of 297 units for the series circuits and 28 units for the multiple circuit, as follows:—

Series Circuit No. 1	58 lamps—Windmill Point and Bicker-	
	dike Pier.	
do	2 39	do —McGill Street to Elevator
		No. 1.
do	3 48	do —Elevator No. 1 to Section 19.
do	4 42	do —Section 19 to Section 22.
do	5 51	do —Section 22 to Section 40.
do	6 59	do —Section 40 to Sutherland
	—	Pier.
	297	do
Multiple Circuit....	28	do —Victoria Pier, Victor and
		Berri Subways.
	—	
Total.....	325 lamps.	

Power Equipment

Beyond re-arranging some of the equipment, very little was added to increase the capacity of any of the sub-stations during 1929.

Transmission Lines and Service Connections:

Small additions were made to the transmission lines and a few services were constructed to meet the demands for electric light and power through the season.

Overhead Trolley Lines for Ship Loader

Overhead trolley lines were erected on top of grain conveyor gallery No. 9 for the operation of a ship loader at this berth. A 10 H.P. reversible motor operated the elevating and travelling mechanism of this grain loader.

Gasoline-Electric Locomotive and Tower Car

For the maintenance and repairs of the overhead trolley system in connection with the railway electrification, a 50-ton gasoline-electric locomotive was purchased. This locomotive is of the double truck type, one truck only being equipped with two driving motors, and is fitted with a 90 B.H.P. Leyland Gasoline Motor direct-connected to a 48 K.W. D.C. Generator, which drives the two motors located in the truck. The locomotive is equipped with a swivel working platform which can be raised or lowered by electric power as well as slewed into position for working on trolleys over adjacent tracks. A small jib crane is located at one end with a capacity of 5 tons for lifting material to and from the flat cars. An air compressor is located in the locomotive to supply approximately 150 cu. ft. of free air per minute at 100 lbs. pressure, for operating pneumatic tools.

This locomotive was tried under various conditions from July 3rd to 17th inclusive, and after complete tests were made, it was put into active use and is operating satisfactorily.

Water Cooler

Some of the equipment in service in the Sub-stations requires a certain amount of water for cooling purposes. In some cases river water is available and in other cases City water has to be used.

In No. 5 Sub-station a water cooler was installed for cooling the transformer banks. This cooler takes the heated water from the transformers and passes it through a number of compartments where, with the use of fans and spray nozzles, the water is cooled sufficiently to be pumped back again into the system. By cooling the water and using it over and over again, a saving of City water can be accomplished.

Telephone System

The train despatchers' telephone system covering the entire section of the electrified railway, has been in operation since the beginning of September and has been found very useful since it was first put into operation.

New Bridge Lighting

A start was made in November towards the installation of lighting units on the New Montreal Harbour Bridge. When completed, this Bridge will have approximately 165 lamps extending from the North Approach at the City end to the South Ramp and Approach opening into Montreal South. The units are similar to the ones we use for Harbour Lighting, excepting the candle power of the lamps is not quite as great.

The regulating transformers, together with the control equipment for the Bridge Lights, were installed in No. 4 Sub-station and at the close of the year the work was approximately 50% completed.

The following is a Comparative Statement of Freight Hoists, supplied with Power through the several sub-stations during the season 1929:

Hoist	Year	Total Teams Carried	No. of Days Operated	Started	Stopped
1	1927	14,916	205	Apr. 18	Dec. 15
	1928	12,113	208	16	15
	1929	13,042	202	22	14
2	1927	15,190	203	Apr. 18	Dec. 10
	1928	10,218	208	16	15
	1929	15,925	208	22	21
3	1927	16,313	206	Apr. 18	Dec. 15
	1928	23,375	208	16	15
	1929	18,147	196	30	21
4	1927	6,547	193	Apr. 18	Dec. 3
	1928	6,361	208	16	15
	1929	5,770	202	22	14
5	1927	7,471	202	Apr. 18	Dec. 10
	1928	8,132	208	16	15
	1929	7,991	203	22	14

Hoist	Year	Total Teams Carried	No. of Days Operated	Started	Stopped
6	1927	8,502	207	Apr. 18	Dec. 15
	1928	8,738	208	16	15
	1929	7,347	202	22	14
7	1927	5,201	200	Apr. 18	Dec. 10
	1928	8,198	208	16	15
	1929	7,530	208	22	21
8	1927	12,948	206	Apr. 18	Dec. 15
	1928	12,955	211	16	19
	1929	14,863	208	22	21
9	1927	10,878	206	Apr. 18	Dec. 15
	1928	14,735	208	16	15
	1929	15,518	208	19	19

MAINTENANCE

Wharves

The Maintenance Force, in addition to ordinary patching of wharves, examination of sewer outlets, examination of crib bottoms for scouring and attention where necessary, taking care of temporary pile cluster landings and floating platforms used during the season by the different industrial companies in the Harbour, as well as the Elevator No. 2 Jetty bridges and stairs, and the section signs, carried out the following important work:—

Driving of Piles

34 piles for mooring and fenders, as well as placing floating stage, for the Shell Oil Co. at Section 62.

47 piles (framed) to make a platform and landing for the Independent Sand Co. at Section 70.

Made a pile platform 500 ft. long for Sylvestre Oil Co., Section 106, consisting of 48 piles, with two flat scows to make up the required distance, and 14 square piles to bunker against.

30 fender piles at Sections 22 and 23 for use of Canada Steamship Lines' vessels during the high water season.

6 piles to close the gap between the old and new cribs at King Edward Pier.

35 piles at lower end of Canada Cement Wharf Extension, Montreal East.

4 piles to act as a breakwater in connection with the new cribwork at Laurier Pier.

16 piles to close the gap between the old and the new cribs at Section 9 and built a pony crib on top of these piles.

4 square piles, to be used as a mooring for floats in crib sinking operations for Sylvestre Oil Co.'s wharf.

8 piles in back of cribs at Section 9 to carry column of Conveyor Gallery of Elevator "B."

Wharves were repaired as follows:

Section 5S, Dominion Coal Dock, rebuilt 300' x 10' x 5' of cribwork.

Sections 6, 7 and 8N, Windmill Point, 600' x 2' of coping and face timber.

Century Coal Dock, rebuilt for a length of 150 ft.

Section 41, 125' x 12' x 7' of cribwork.

Section 10, 300' of face timber and 25 pcs. of planking.

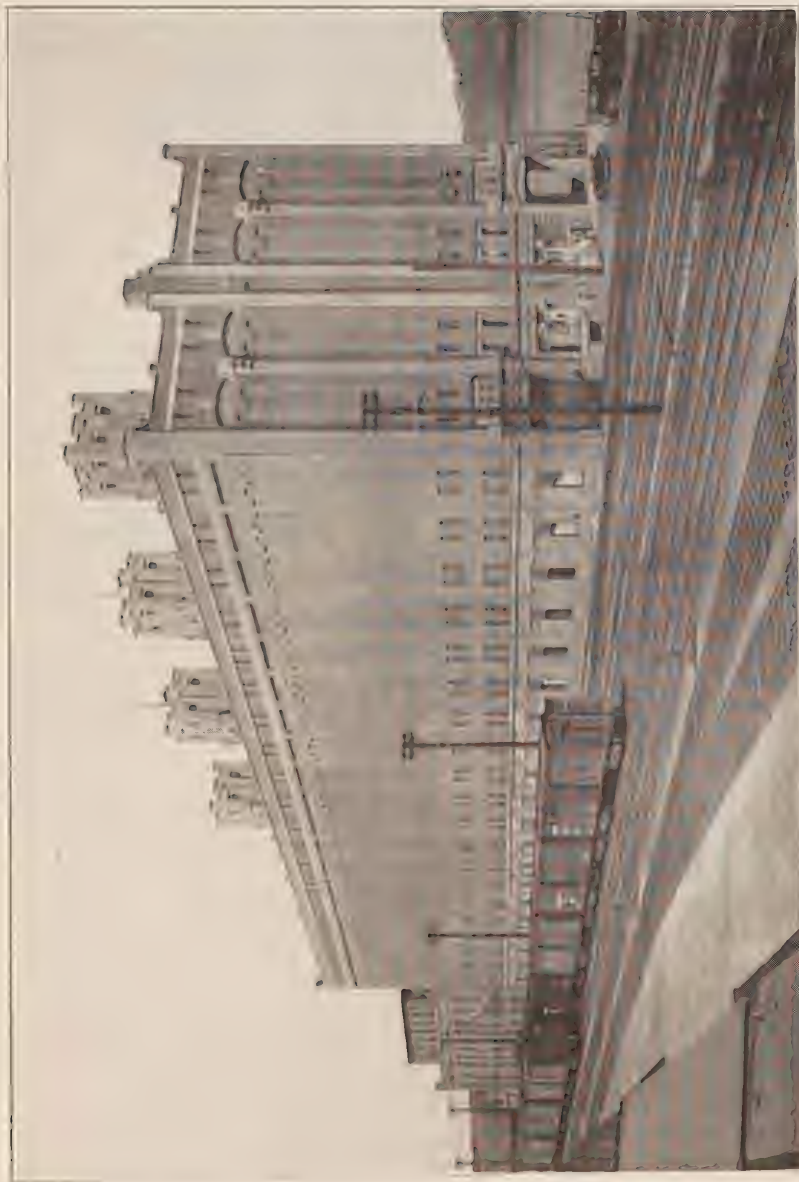
Shed No. 3, 120' x 5' of face timber, as well as some cross ties and planking.

Shed No. 5, 80 ft. of coping 12" by 12" and 90 pcs. of 3" planking.

Pointe-aux-Trembles Village Wharf, repaired 4' x 35' of face, and on the east side 70' x 2' with 12" x 12" timber; also closed the ramp in front and surfaced the whole with shale rock.

Sutherland Pier, 550 ft. of cribwork on shore wharf and west side of pier, 7 ft. x 12 ft.

Tarte Pier, built two 16' sections of timber to prevent ships from hooking on to face timber, east side of pier.



THE HARBOUR COMMISSIONERS' COLD STORAGE WAREHOUSE

Imperial Oil Wharf, Montreal East, built retaining wall of 12" x 12" timber, 25' x 10' x 8' to retain the bank and carry pipe line.

Shed 15, 75 ft. of coping and 60 pcs. of 3" planking.

The old Government Wharf at Longueuil was resurfaced with shale rock material over its entire length, some 1,000 ft. by approximately 25 ft. wide.

Bollards

Rebuilt foundations for two mooring posts; also moved two mooring posts from in front of Hopper Tower, Elevator B.

Built foundations of two mooring posts at Section 10.

Placed one mooring post on the west side and one at the south-east corner of Tarte Pier.

Tightened mooring posts at Shed 5.

Rebuilt the foundation of mooring post at Marine Tower Jetty, Elevator No. 2.

Repaired two mooring posts at Shed 15.

Miscellaneous Work

Repaired stairs from high to low level at Canal Entrance, both sides.

Tore down 250 ft. x 25 ft. of old cribwork at Section 9 to allow the dredges to dig a seat for two concrete cribs.

Repaired side walls of Lachine Canal Raceway, Section 5, and placed 12-25" steel beams across the top to form a roof and carry the roadway over it; also built a retaining bulkhead wall to protect the roadway from the flood waters.

Placed a landing stage for the Immigration Department at Section 77, with approach and stairway over the river bank.

Made and hung 4 round hardwood fenders at Shed 19.

Placed the fenders on the angles of the Marine Tower Jetty, Elevator No. 3.

Repaired the walls and bottom of sump at Section 41, used by the Harbour Traffic Department and Harbour Yard for engine service, etc.

Placed 10 sign beacons opposite where lake boats anchor, from Tarte Pier to Vickers Dry Dock; also ship anchorage signs from Sections 78 to 90.

Made 6 fenders for use along the dock at Windmill Point.

Repaired four 100 ft. sections of fenders used along the concrete dock at Sections 9 to 11.

Transit Sheds

The following are the most important items of work done by the Sheds Maintenance force during the season:—

The interior of lower floors of Sheds Nos. 5, 6 and 16 received two coats of paint.

The exterior of Conveyor Gallery leading from Elevator “B” to the south end of Windmill Point Basin received two coats of paint.

The exterior of galleries over Sheds Nos. 8 and 10 received two coats of paint.

The exterior of upper and lower galleries connecting Elevator No. 1 with Tower “D” received two coats of paint.

The exterior of Tower “D” received two coats of paint.

The exterior of side gallery, Elevator No. 2, together with its spouts and hoppers, received two coats of paint.

The structural steel of gallery connecting Elevator No. 3 with Sheds Nos. 44 and 46 received two coats of paint.

The structural steel of galleries over Sheds Nos. 44 and 45, 46 and 47 received two coats of paint.

Some 40 new steel doors, with sashes, were fabricated and installed in lower floor of Shed No. 2, riverside.

The 32 doors of Shed No. 3, lower floor, riverside, were altered and rebuilt.

The riverside doors of Sheds Nos. 44 and 45 numbering 56 in all were altered and rebuilt at the base.

The usual maintenance of roofs, spouts and gutters was carried out by the Maintenance forces during the season.

Over 2,542 lin. ft. of gutters, 1,548 lin. ft. of flashing and 2,120 lin. ft. of gutter were renewed on the transit sheds.

Plumbing

The laying of sewer and water main extensions, the equipment of lavatory rooms, the repair and renewal of the plumbing system, along the water front, including all buildings, transit sheds, grain elevators, owned by the Commissioners, were carried out by the usual plumbing force.

Roadways, Sheds, Water Service, etc.

The general cleaning, watering and upkeep of the High and Low Level roadways was kept up during the season.

All water connections and latrines were connected up by the 15th May and kept in good order throughout the season.

All latrines and drains were flushed out with the fire hose at regular intervals during the season.

The electric hoists were also flushed out with the fire hose every week end.

The transit sheds were kept clean during the season, scows being placed at the disposal of this department for placing thereon sweepings and refuse from sheds, as well as from the wharves.

6,041,000 cu. ft. of fresh water (880 orders) was supplied to ships between Sections 4 and 46.

All the water meters in the Harbour were checked once a month with the City Meter Inspector.

The Quick Acting Gates in the Flood Wall were kept in good working order at all times.

The usual force of watchmen, etc., was employed to protect the property of the Commissioners, to guard the public from accident and to regulate the Harbour dumping grounds.

Life Saving Equipment

The usual precautions were taken to facilitate the saving of life and the prevention of accidents by the maintenance of railings and the distribution of ropes, gaffs and life preservers at frequent intervals along the water front, which proved their value on a number of occasions during the season.

Fire Prevention

All hydrants and fire equipment were inspected daily and kept in readiness for service.

All fire extinguishers were recharged on May 1st and kept in operating condition, and some of them were used on a number of occasions, but no damage to Harbour property worth reporting was done.

Cold Storage Plant Equipment

The refrigerating equipment in both the Warehouse and Power House operated through the year in a satisfactory manner. The pump delivering water from the river to condensers was overhauled and new impeller fitted. 2,619 100 lb. blocks of ice were made and delivered to the various Harbour works and Fleet.

Harbour Yard Shops

Owing to falling off in grain shipments, the amount of work passing through the shops was insufficient to keep the shop employees engaged full time. They worked approximately 66% of the regular time from July 27th, 1929, to the end of the year. The total number of orders executed in these shops and their allocation is as follows:

For Elevator No. 1.....	131
“ “ No. 2.....	135
“ “ No. 3.....	91
“ “ “B”.....	80
“ Conveyor System.....	48
“ Electrical Department.....	524
“ Traffic Department.....	278
“ Locomotive Cranes.....	70
“ Floating Plant and Equipment.....	608
“ General.....	860
<hr/>	
Total.....	2,825

A great variety of work was carried out in these shops in a satisfactory manner.

A portable Combination Gasoline Engine—electric motor driven Electric Welding Machine was added to the equipment. The welding generator is of 300 amp. capacity.

Floating Plant

The year opened with the following vessels on the Commissioners' shipways for repairs:

Derricks Nos. 3, 5, 6 and 8.

Tug St. Peter, for hull and machinery repairs.

Extensive repairs were made on the wood hulls of Derricks Nos. 3, 5 and 8 and the hull of Derrick No. 6 was found to be in such condition that it was decided to replace the wooden hull by one of steel. Tenders were invited and the lowest bid, that of Manseau Shipyards, Ltd., was accepted. Delivery will be made at the opening of the 1930 navigation season.

Scows Nos. 64 and 66 were re-decked and minor repairs were made on other scows as required.

The deck plates of the 75-ton Floating Crane were straightened and additional stanchions and beams were fitted to support the deck.

The 40 H.P. Gasoline Engine in the motor boat "Messenger" was replaced by one 100 H.P. engine.

The last of the Floating Grain Elevators, No. 18, was sold.

The Tug "B Paul," sunk at Section 33, was raised by the Commissioners' plant on April 17th, 1929.

The Tug "Sir Hugh Allan" was put into commission on April 8th, breaking ice in Vickers' Basin.

The Floating Plant completed a heavy season's work with a minimum of time lost for repairs.

Grain Elevators

The in-and-out movement of grain detailed elsewhere in this report shows a considerable decrease in volume when compared with the previous year. The usual winter over-

hauling was completed in time to handle grain when required, and until the close of the season, the grain handling equipment operated most satisfactorily.

The principal items of equipment attended to during the year were:—

Elevator "B"

Lofter Legs 2 and 4 were speeded up, rope drives removed and chain drives installed.

Elevator No. 1

Rope drives were removed and chain drives installed for two conveyor belts on Conveyor Floor and one belt on bin floor. A new leg winch was made and installed in No. 1 Marine Tower. In No. 2 Marine Tower the shovel gear was remodelled and the shovel drum drive, winch drive and conveyor drive re-arranged. Bronze nuts and bushings were fitted to the Car Unloading Machines which were given a thorough overhauling.

Elevator No. 2

An extensive re-arrangement of machinery in the Jetty Marine Tower was carried out, resulting in a greatly improved layout in so far as drives and the handling of grain is concerned. The clean-up shovel drives were re-modelled. The rope drives of the two conveyor belts from tower to house were changed to chain drives which were placed at the head of the gallery instead of in the Tower. The rope drives of the two Marine Lofters in the house were changed to chain drives. The four car unloading machines were fitted with bronze nuts and bushings and a thorough overhauling of these machines was carried out. The elevating capacity of five shipping legs was increased to 20,000 bushels per hour each, thereby speeding up delivery to vessels.

Elevator No. 3

Two bin bottoms in the Annex were lined with No. 12 gauge steel. Magnetic brakes were made and installed on the

drives of four inclined conveyor belts, also one set of similar brakes were fitted on the drive of No. 3 Lofter Leg.

Conveyor Galleries

The bottom of lofter leg in Tower "B" was raised to a level above the floor and above flood level.

Shiploaders 7 and 9

The booms of these two machines were removed at the close of navigation and stored on the upper floor of Shed 9.

Elevator and Conveyor Belt Replacements

Elevator No. 1. Apr. 29th—Lofter Leg No. 4, 35" x 444 ft.
7-ply.

Dec. 7th—Riverside Conveyor, 42" x 1,080
ft. 4-ply.

Elevator No. 2: Apr. 5th—Inside Conveyor, 40" x 720 ft.
4-ply.

Apr. 10th—Lofter Leg No. 1, 38" x 303 ft.
7-ply.

Apr. 13th—Lofter Leg No. 4, 32" x 475 ft.
7-ply.

Apr. 15th—South Conveyor in Annex, 40"
x 275 ft. 4-ply.

Apr. 17th—West Conveyor in Annex, 40" x
275 ft. 4-ply.

Apr. 19th—Marine Leg No. 2, 26" x 250
ft. 7-ply.

Apr. 22nd—N.W. side Conveyor, 40" x 640
ft. 4-ply.

Apr. 26th—N.E. side Conveyor, 40" x 330
ft. 4-ply.

Elevator No. 3: Mch. 14th—Marine Leg No. 1, 23½" x 178
ft. 7-ply.

Mch. 25th—Marine Leg No. 2, 23½" x 178
ft. 7-ply.

Elevator "B": Apr. 10th—Lofter Leg No. 2, 22" x 413 ft.
7-ply.

Apr. 12th—Lofter Leg No. 4, 22" x 413 ft.
7-ply.

Conveyors: May 15th—Gallery 15 Conveyor, 36" x
1,200 ft. 4-ply.

Hoists

Overhauled and kept in repair for continuous operation, 14 Freight Hoists and 11 Passenger Hoists. System of lubrication on Hoists Nos. 2, 3, 5 and 9 changed from oil to grease.

Locomotive Cranes

The amount of coal handled by our Cranes from ships did not vary much from the figures of last year. The distribution of working time is as follows:—

	1929	1928	1927	1926
On Coal.....	45.6%	34.8%	57%	31%
On Harbour Work.....	21.2%	33.4%	30%	49%
Miscellaneous Work.....	33.2%	31.8%	13%	20%

FLOATING CRANE

The record of work done by the 75-ton Floating Crane is as follows:—

Number of working days.....	205
Number of days working.....	166
Total number of lifts:	
Commercial.....	1,775
Commissioners' Service.....	135
	——— 1,910
Average weight of lifts:	
Commercial.....	9 tons
Commissioners' Service.....	19 "
Greatest lift:	
Commercial.....	80 "
Commissioners' Service.....	75 "
Greatest tonnage from single ship:	
S.S. "Valfiorita".....	1,008 "

Total weight lifted:

Commercial.....	15,773	
Commissioners' Service.....	2,636	
	—	18,409 “
Total weight lifted in season of 1928.....		10,406 “
Total number of lifts made in 1928.....		1,051

EMPLOYMENT IN THE HARBOUR OF MONTREAL

The following table shows the maximum and average number of workmen employed by the Harbour Commissioners during the season of 1929, exclusive of men employed by the different contractors on Harbour construction work:—

	Maximum	Average
Elevator No. 1: Operation.....	36	34
Car Shovellers.....	9	9
Boat Shovellers.....	39	29
Elevator No. 2: Operation.....	39	38
Car Shovellers.....	7	6
Boat Shovellers.....	52	29
Baggers.....	28	14
Elevator No. 3: Operation.....	51	38
Car Dumper Operation.	14	9
Boat Shovellers.....	56	34
Elevator “B”: Operation.....	43	34
Car Shovellers.....	19	5
Boat Shovellers.....	52	27
Elevators:		
Maintenance and Repair Gang.....	66	45
Conveyor Galleries:		
Elevators Nos. 1 and 2.....	60	58
Elevator No. 3.....	27	18
Elevator “B”.....	15	10
Cold Storage Warehouse: Operation and Maintenance.....	32	30
Cold Storage Powerhouse: Operation and Maintenance.....	14	11
Electrical.....	14	13
Traffic Department.....	132	123

Police Department.....	66	61
Guard Pier: Maintenance and Repair men.....	44	38
Shipyard.....	83	45
Dredging Fleet: Crews of Dredges, Tugs, etc.....	176	166
Harbour Yard Shop: All trades.....	119	84
Round House: Machinists, etc.....	30	29
Electrical Department.....	126	99
Maintenance of Transit Sheds.....	33	23
Construction: Wharves, tracks, etc.....	163	68
Maintenance of Harbour.....	363	194

WATER LEVELS

The depth of water for navigation in the Montreal Harbour Ship Channel and on the Sill of Lower Lock, Lachine Canal, is given in the following table:—

	Depth on Old Lock Sill, Lachine Canal		Depth in Harbour Channel	
	Average 1915-29	Average 1929	Average 1928	Average 1929
May.....	19'9"	23'0"	38'6"	38'5"
June.....	17'8"	19'5"	35'1"	34'10"
July.....	16'2"	18'3"	32'8"	33'8"
August.....	15'2"	16'5"	31'8"	31'10"
September.....	14'6"	15'7"	31'0"	31'0"
October.....	14'8"	15'6"	32'6"	30'11"
November.....	15'2"	15'7"	32'11"	31'0"

LIST OF HARBOUR COMMISSIONERS' FLOATING PLANT

Description of Vessel	Hull.			When built	Engines				Capacity of Bucket	Depth to which Dredge can work	Remarks		
	Length	Breadth	Depth		Kind of Engine	No. of cylin- ders	Dia. of cylin- ders	Length of stroke				Pres- sure of steam	
Dredges	ft. in. over all	ft. in. beam	ft. in. over all				inches	inches	lbs.	c.y.	ft.		
J. Kennedy (Boom Spoon) . . .	104	4 37	0 7	1892	Horizontal non-condensing	{ 2	16	18	125	7	40	Steel Hull, Rblt. 1923-24	
No. 5 " " . . .	104	0 36	2 11	1910			{ 2	16	18	125	7	40	Steel Hull.
No. 6 " " . . .	104	2 39	2 10	1912			{ 2	16	18	140	7	50	Steel Hull.
Derricks													
No. 1 Clam shell	87	2 31	2 9	1899	Horizontal high pressure	{ 2	12	14	140			Wooden hull, Rblt. 1925	
No. 3 " "	77	0 27	6 8	1900			{ 2	12	14	125			Wooden hull. } Rebuilt 1923
No. 4 " "	80	5 27	10 7	1892			{ 2	12	14	125			Wooden hull. }
No. 5 " "	80	1 27	10 7	1892	{ 2	{ 2	12	14	125			Wooden hull, Rblt. 1913	
No. 6 " "	80	1 27	10 7	1892			{ 2	12	14	125			Wooden hull, Rblt. 1913
No. 8 " "	87	5 31	0 9	1915			{ 2	12	14	140			Wooden hull " 1915
Tugs													
St. Peter (Fire Tug)	74	8 16	1 8	1875	Vertical non-condensing	1	20	22	125			Wooden hull, Rblt. 1921	
Aberdeen	79	3 18	3 9	1895	Vertical con-densing	{ 1	{ 32	{ 24	140			Steel hull.	
Robert Mackay	80	9 17	6 10	1899	Vertical con-densing	{ 1	{ 32	{ 24	140			Steel hull	
Sir Hugh Allan	130	0 26	6 15	1911	Vertical triple expansion condensing	{ 2	{ 16	{ 24	180			Steel hull, twin screws.	
John Young	91	8 22	0 9	1911	Vertical condensing	{ 2	{ 12	{ 18	140			Steel hull, twin screws.	
Passé-Fartout	49	1 11	3 5	1912	Vertical high pressure	1	9	10	110			Wooden hull, Rblt. 1925	
David Seath	75	5 18	5 10	1915	Vertical condensing	1	13	22	140			Wooden hull.	

AVERAGE DEPTH FOR EACH MONTH IN THE 30-FOOT CHANNEL AT SOREL
(30 feet at Extreme Low Water of 1897)

Year	May	June	July	August	September	October	November	High	Low
1915.....	34' 7"	32' 6"	31' 6"	31' 4"	31' 1"	30' 11"	30' 8"	37' 4"	30' 1"
1916.....	38' 9"	37' 2"	34' 0"	32' 5"	31' 7"	31' 9"	31' 10"	40' 0"	30" 9'
1917.....	36' 8"	36' 6"	34' 10"	33' 6"	32' 3"	32' 6"	33' 0"	38' 2"	31' 3"
1918.....	35' 1"	33' 0"	32' 10"	30' 11"	31' 4"	32' 6"	33' 10"	36' 11"	30' 3"
1919.....	38' 7"	35' 7"	32' 5"	31' 4"	31' 1"	31' 7"	32' 9"	39' 11"	30' 3"
1920.....	33' 7"	30' 10"	30' 4"	29' 9"	29' 4"	29' 4"	29' 4"	34' 8"	28' 3"
1921.....	34' 7"	31' 9"	30' 10"	31' 7"	29' 10"	30' 2"	30' 5"	37' 6"	30' 1"
1922.....	36' 0"	33' 9"	34' 2"	32' 2"	31' 2"	31' 3"	30' 11"	37' 8"	30' 1"
1923.....	38' 4"	34' 6"	32' 4"	31' 5"	31' 4"	30' 11"	30' 9"	39' 1"	30' 0"
1924.....	38' 7"	34' 5"	32' 5"	31' 10"	31' 11"	32' 3"	31' 3"	40' 0"	30' 1"
1925.....	35' 2"	33' 9"	32' 4"	31' 8"	30' 11"	31' 2"	31' 9"	36' 6"	30' 3"
1926.....	37' 4"	34' 6"	32' 10"	31' 7"	31' 1"	31' 3"	33' 2"	39' 6"	30' 6"
1927.....	34' 3"	33' 11"	33' 3"	32' 5"	31' 3"	31' 4"	34' 10"	37' 8"	30' 5"
1928.....	40' 3"	36' 6"	34' 0"	33' 0"	32' 8"	34' 0"	34' 2"	41' 7"	31' 7"
1929.....	39' 11"	35' 11"	34' 4"	32' 9"	32' 2"	32' 3"	32' 3"	41' 4"	31' 3"

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